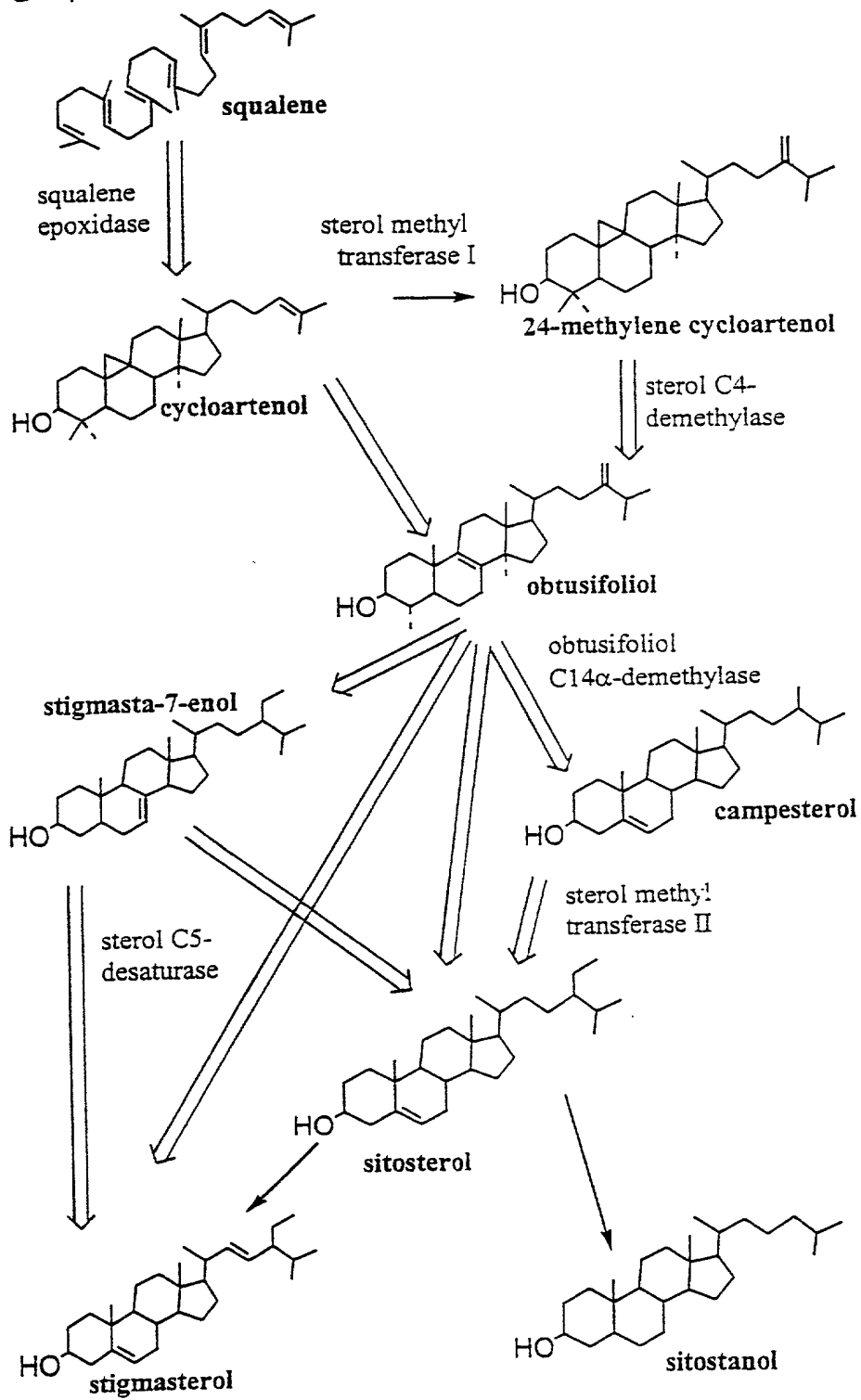


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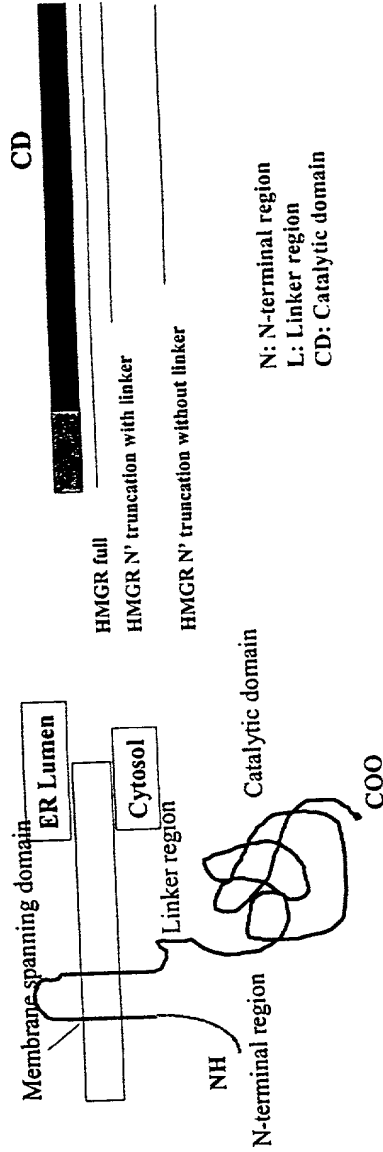
#8

FIG. 1



09885723-12101

FIG. 2



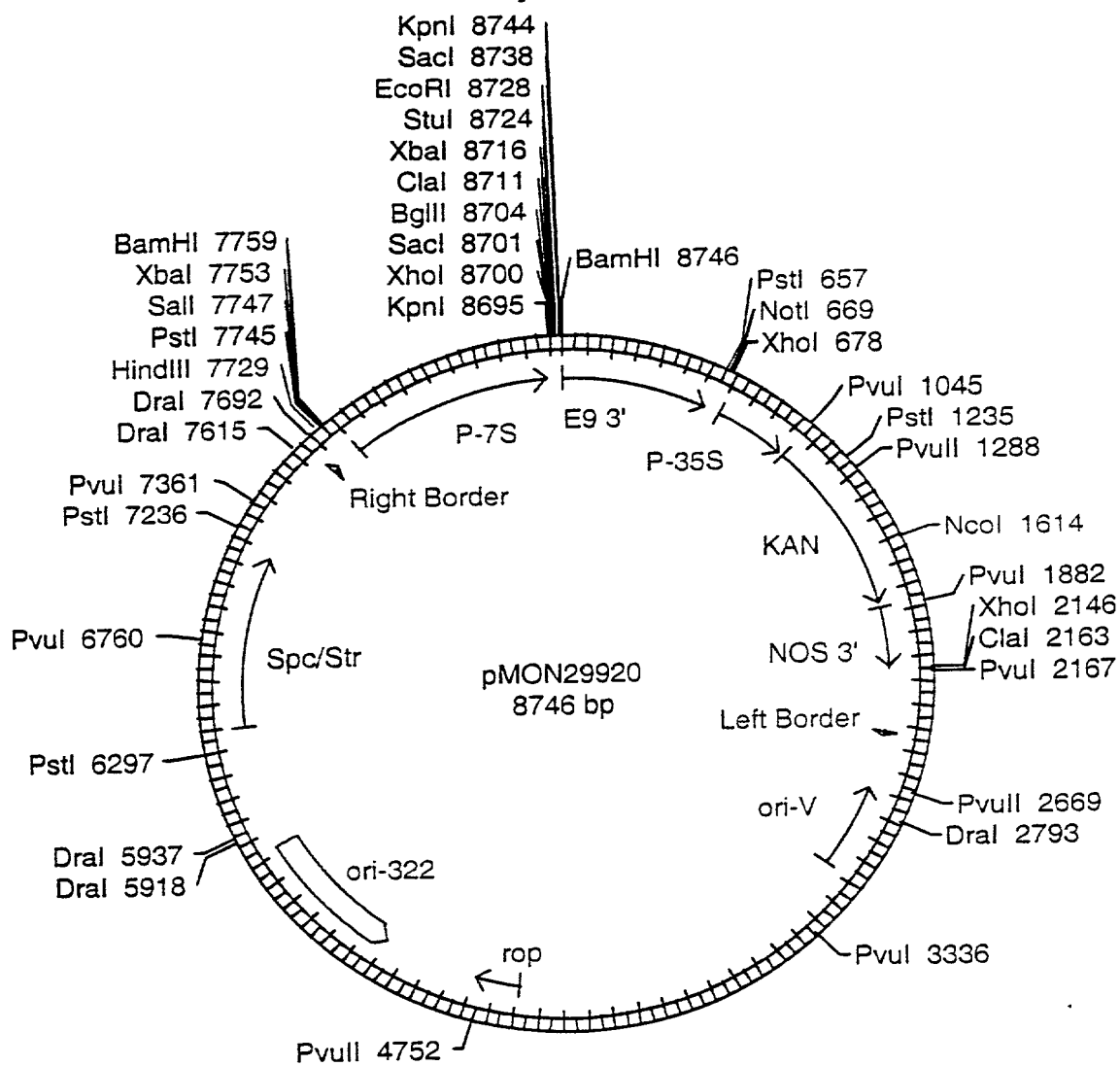


Figure 3: Construct pMON29920

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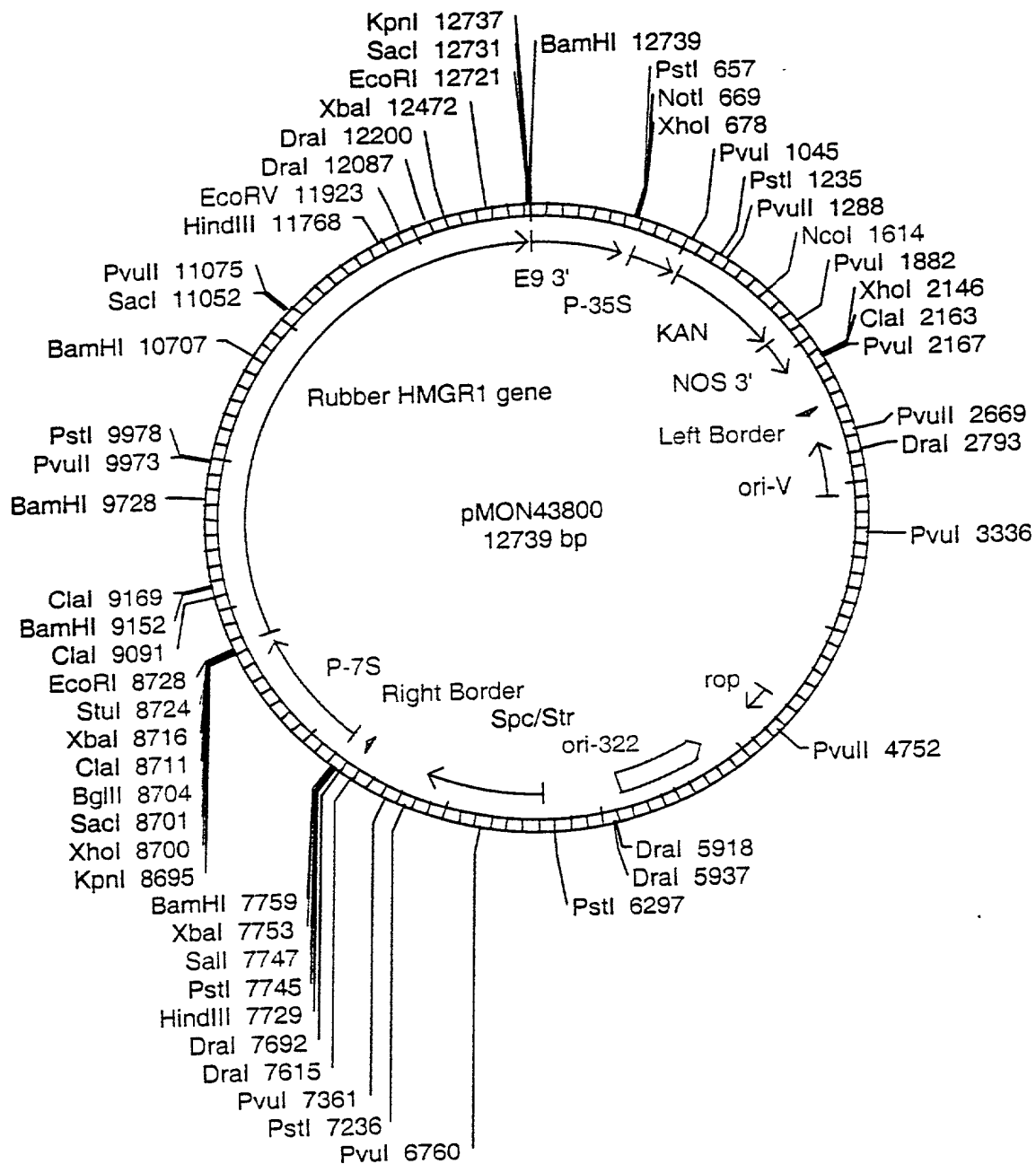


Figure 4: Construct pMON43800

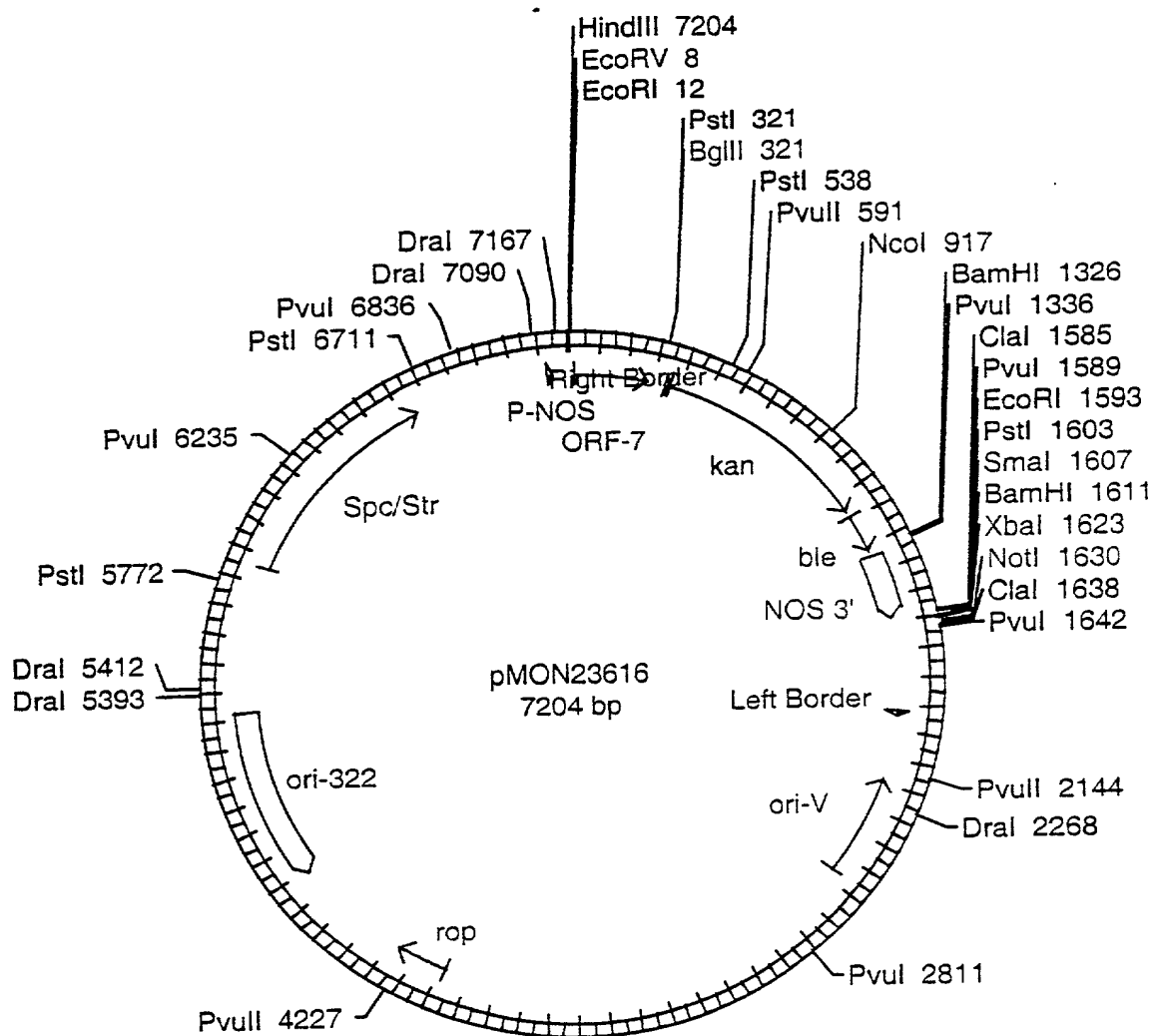


Figure 5: Construct pMON23616

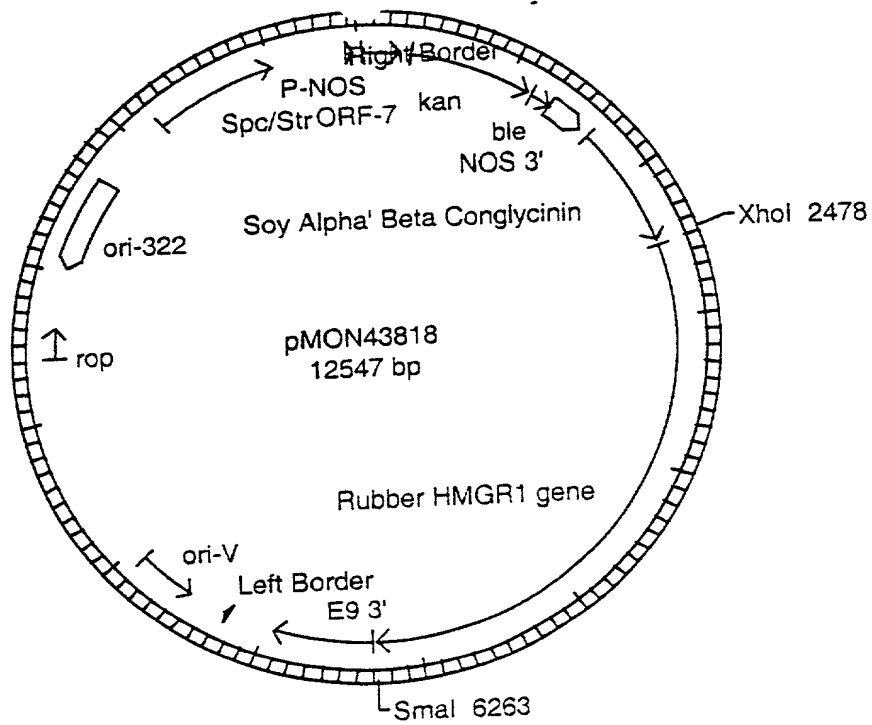


Figure 6: Construct pMON43818

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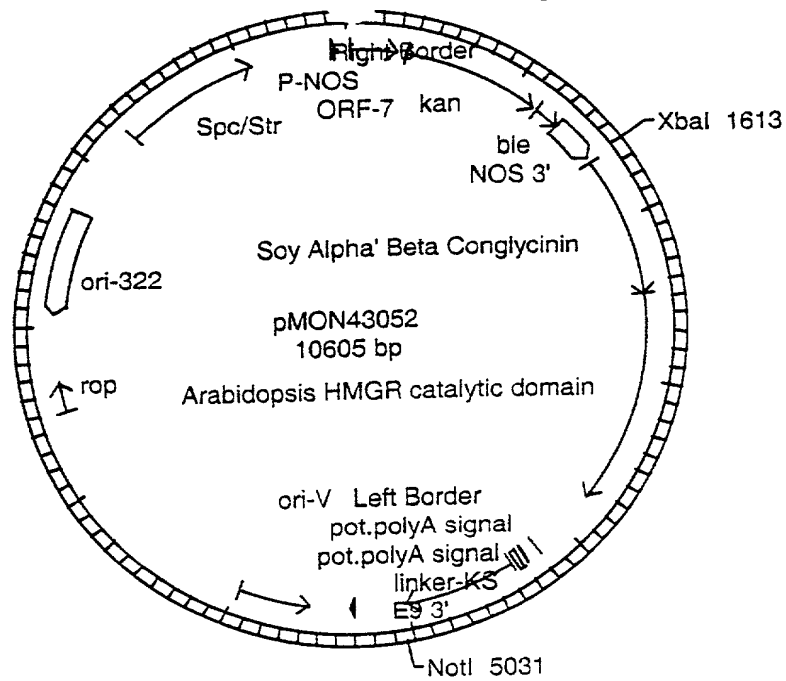


Figure 7: Construct pMON43052

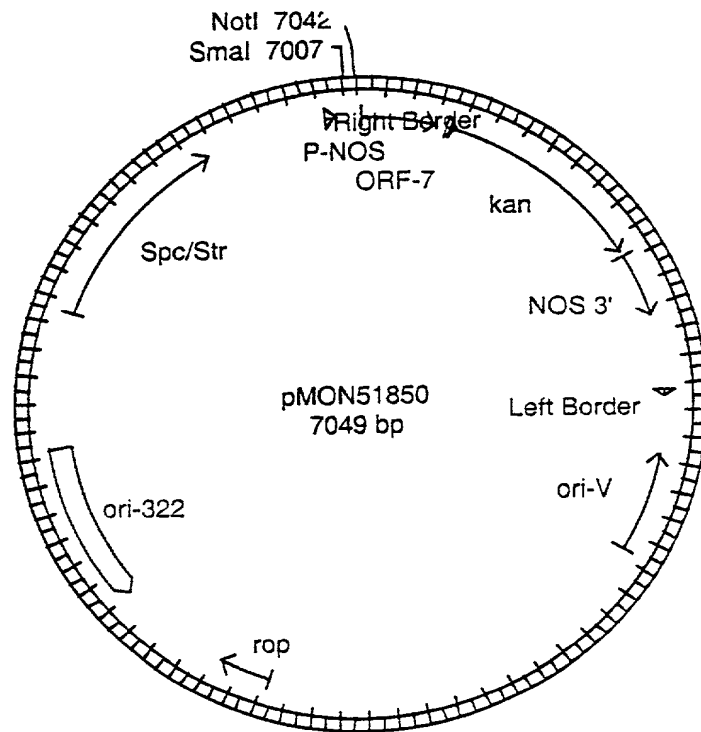


Figure 8: Construct pMON51850

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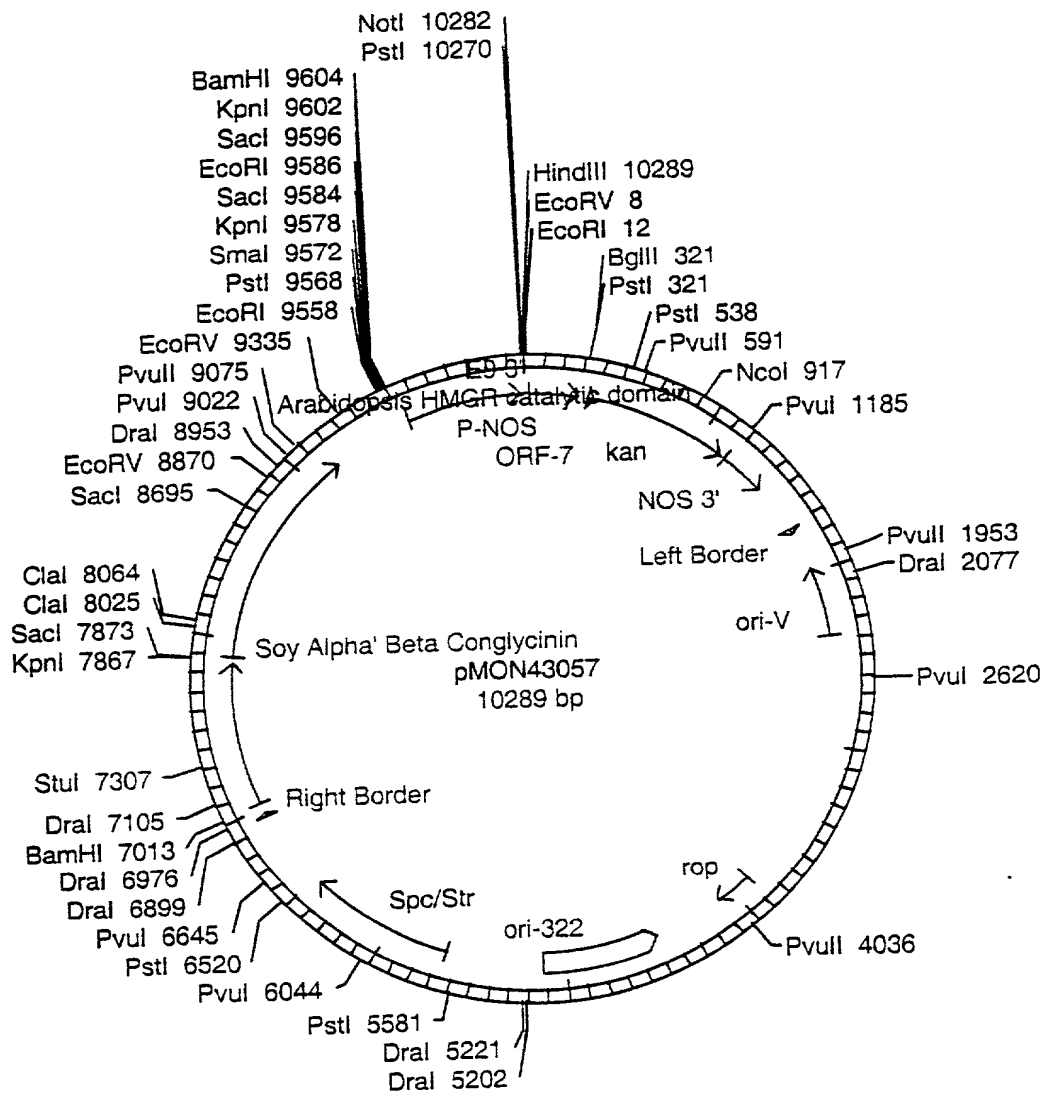


Figure 9: Construct pMON43057

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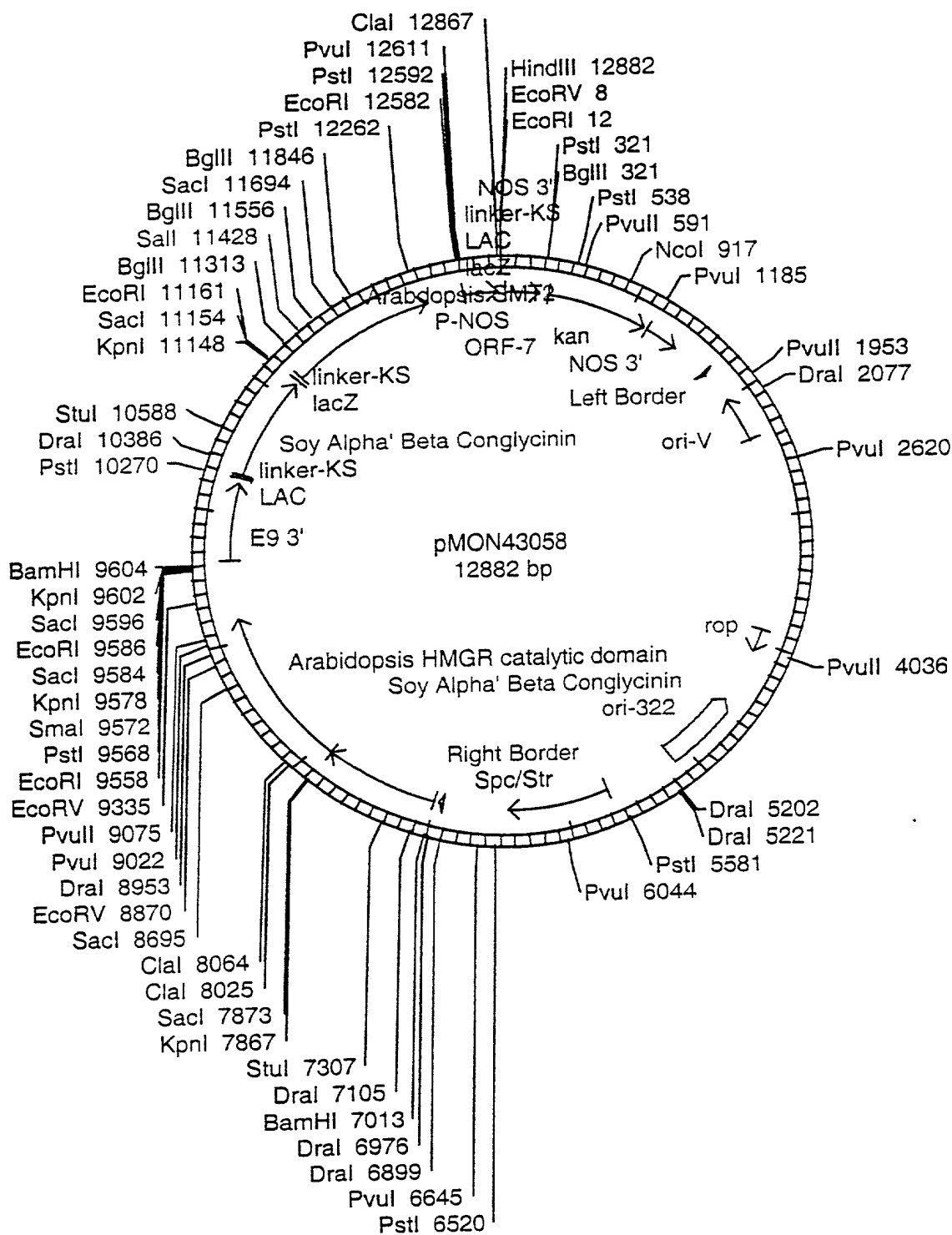


Figure 10: Construct pMON43058

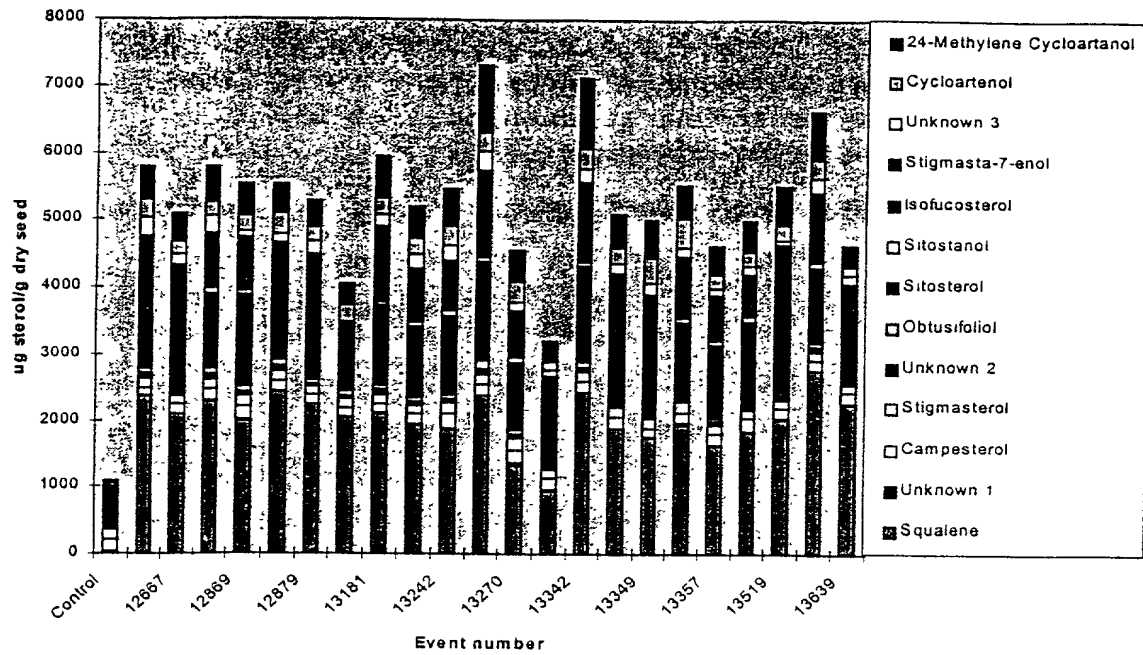


Figure 11: Sterol composition of R1 transgenic soybean seeds when *Arabidopsis* truncated HMGR (catalytic domain without linker) was overexpressed using seed-specific 7S promoter (data from pMON43057: p7s::At HMGR truncated).

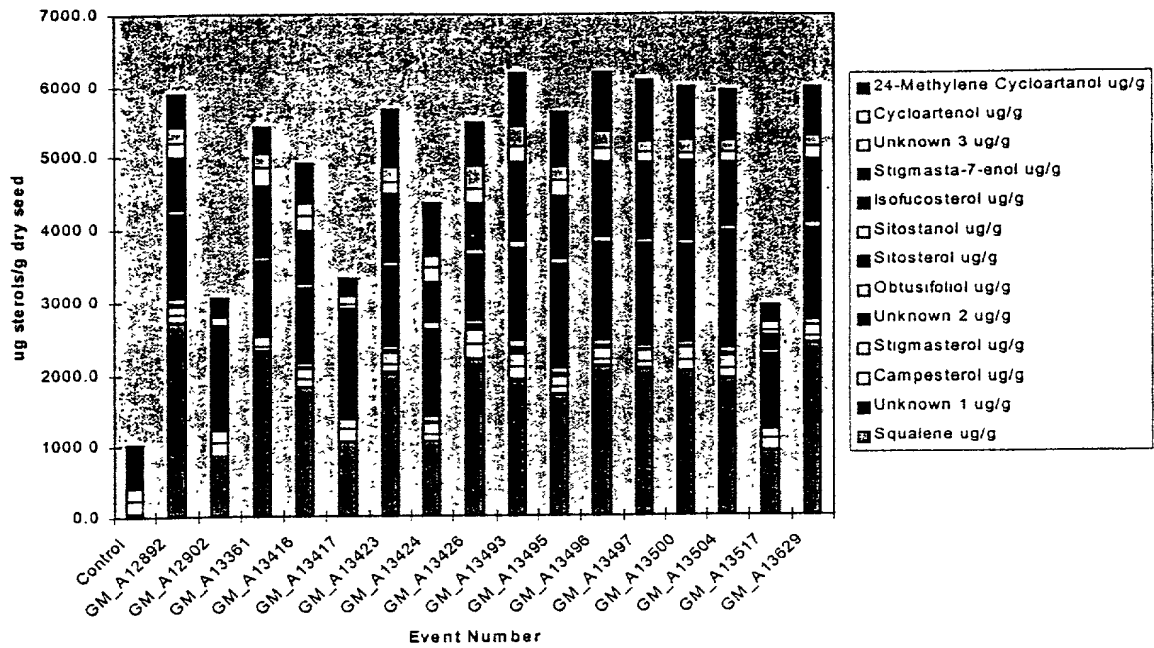


Figure 12: Sterol composition of R1 transgenic soybean seeds when *Arabidopsis* truncated HMGR (catalytic domain without linker) and *Arabidopsis* SMTII were overexpressed (data from pMON43058: p7S::At HMGR truncated & p7S::At SMTII). The expression of the genes is controlled by the seed-specific 7S promoter.

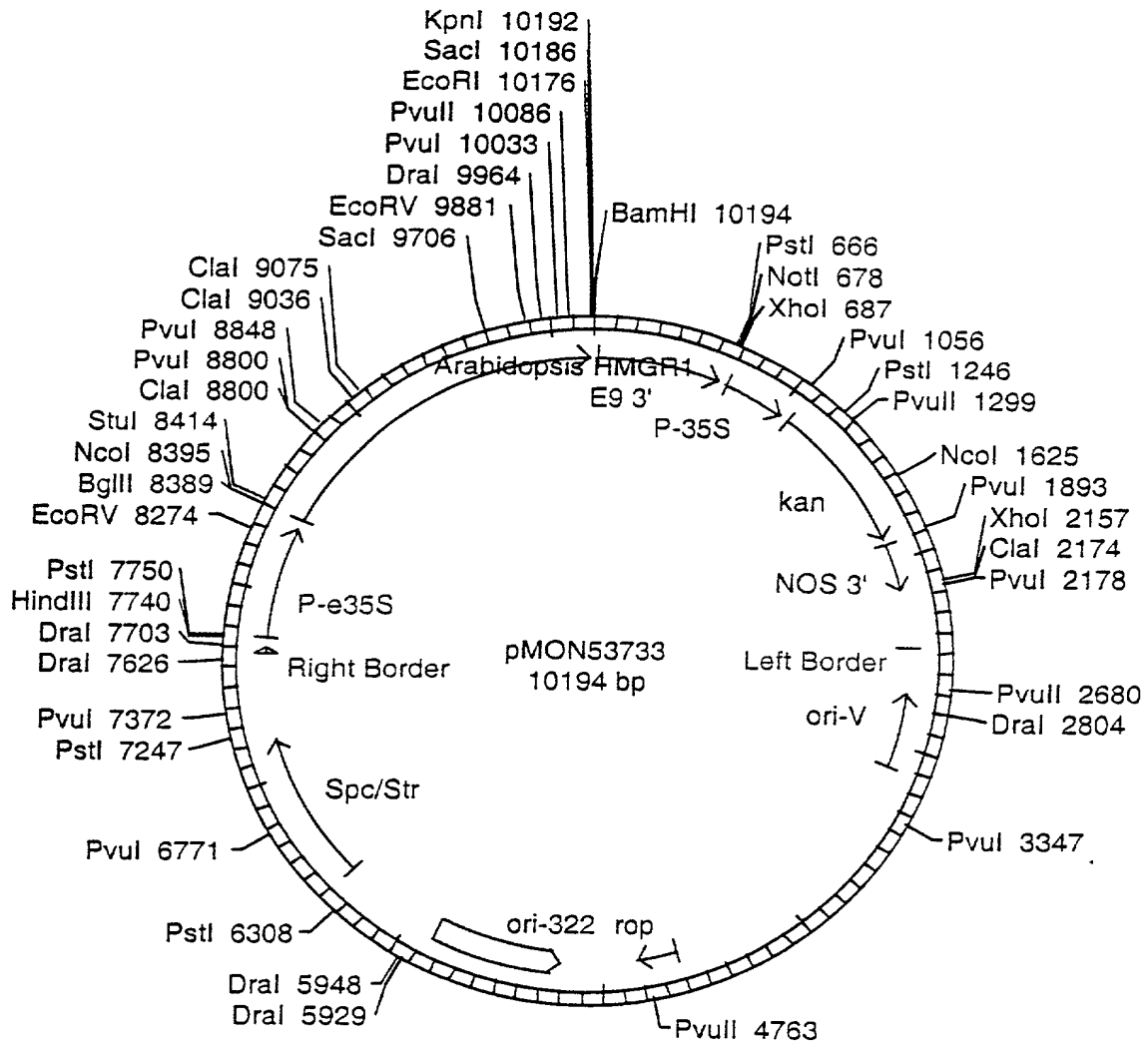


Figure 13: Construct pMON53733

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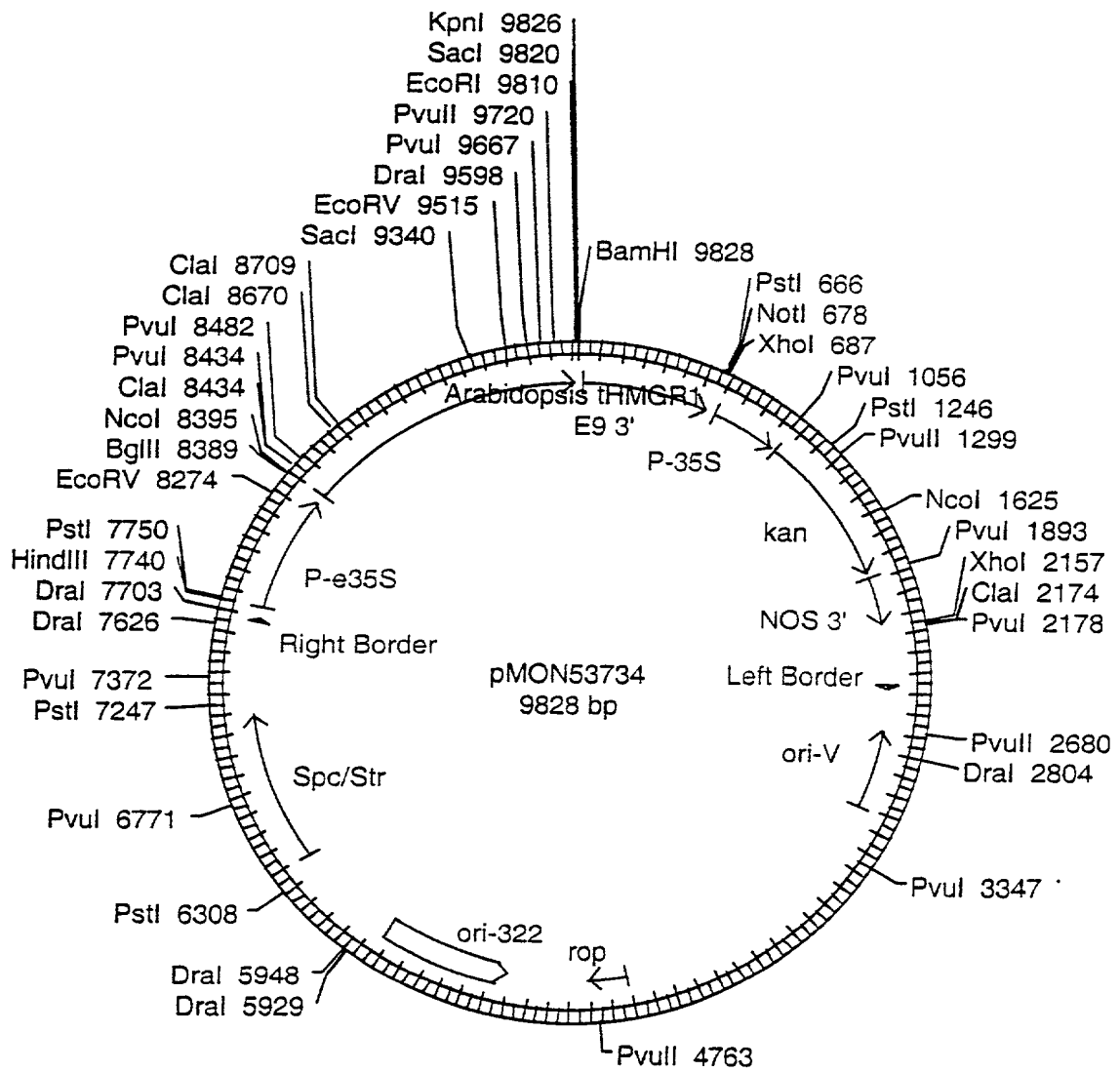


Figure 14: Construct pMON53734

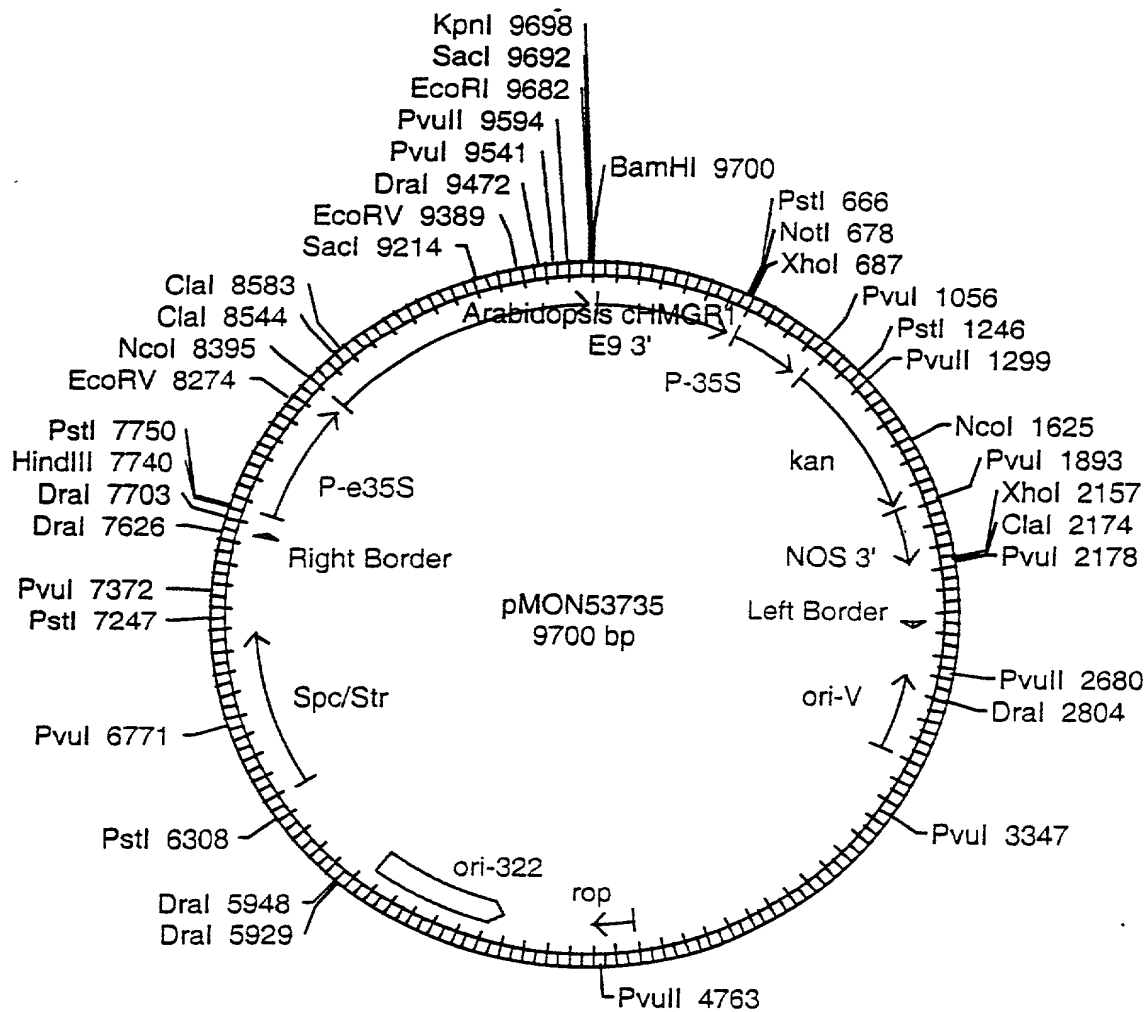


Figure 15: Construct pMON53735

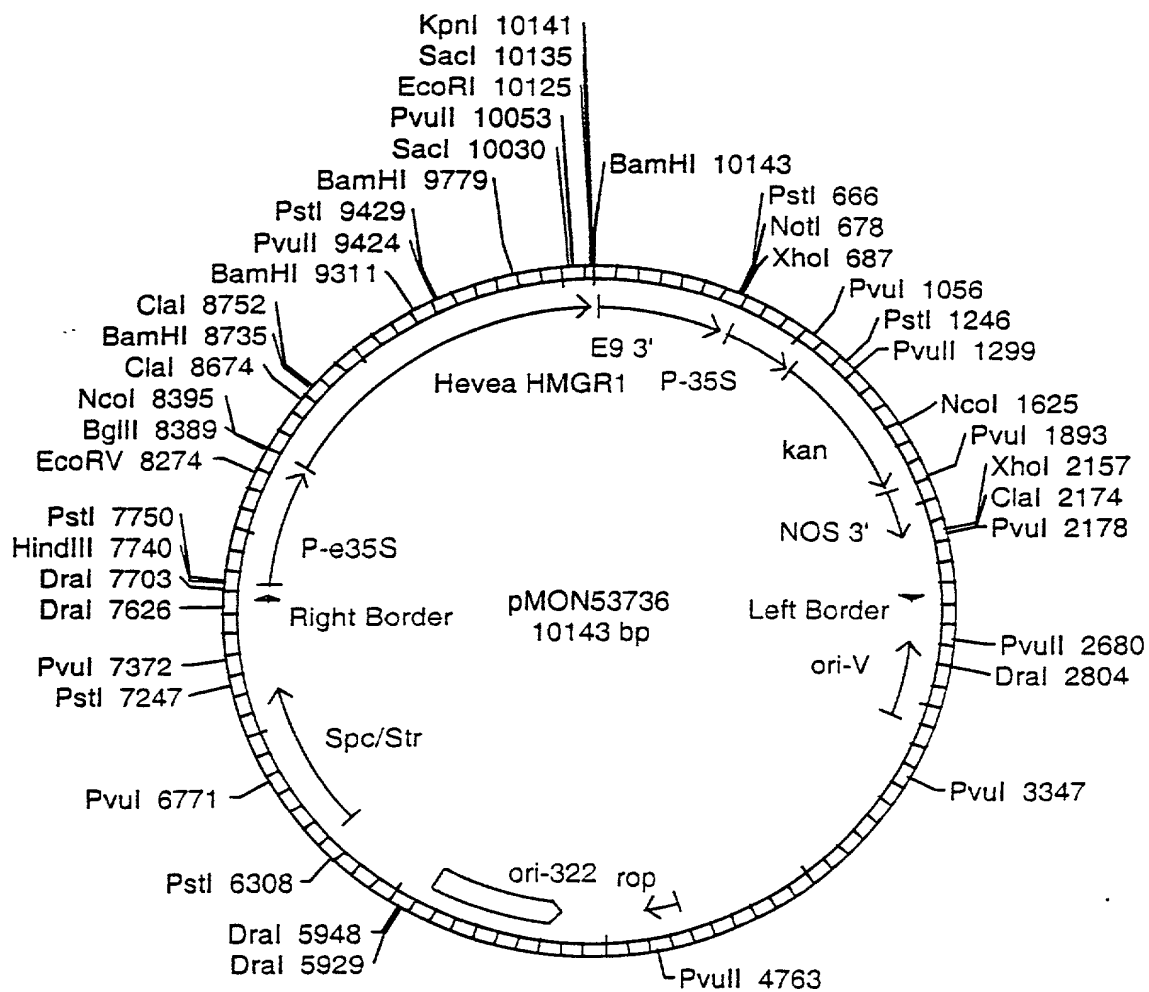


Figure 16: Construct pMON53736

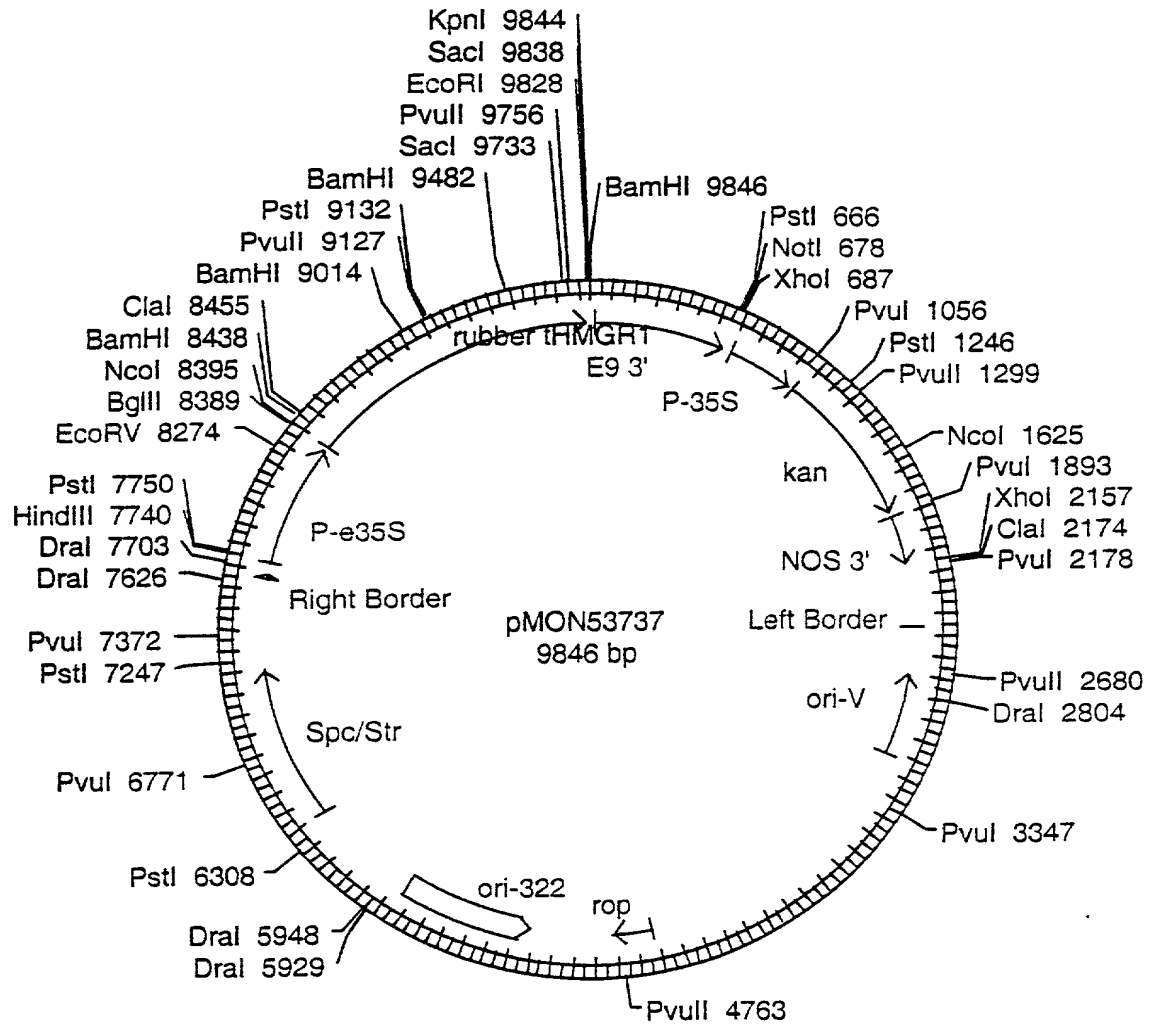


Figure 17: Construct pMON53737

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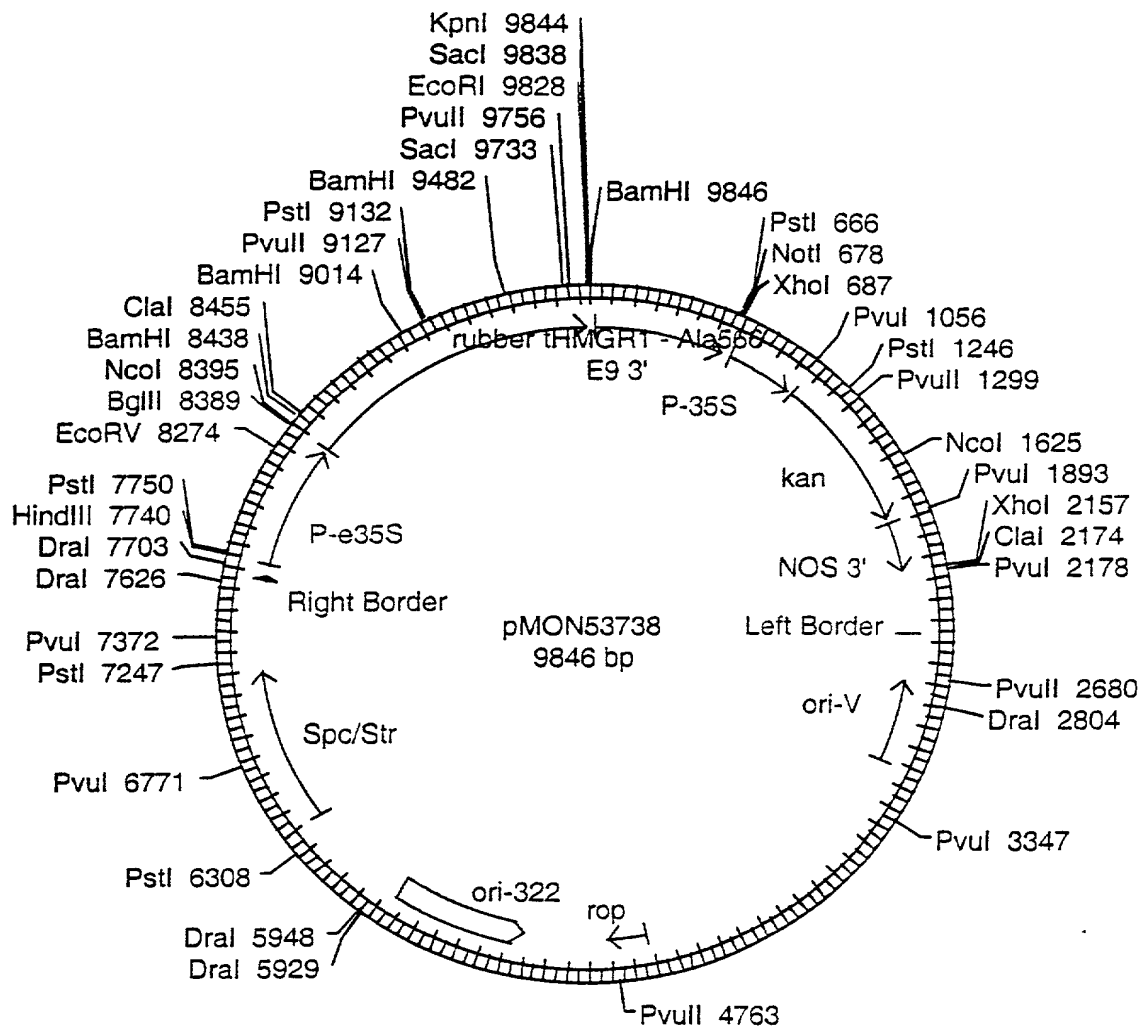


Figure 18: Construct pMON53738

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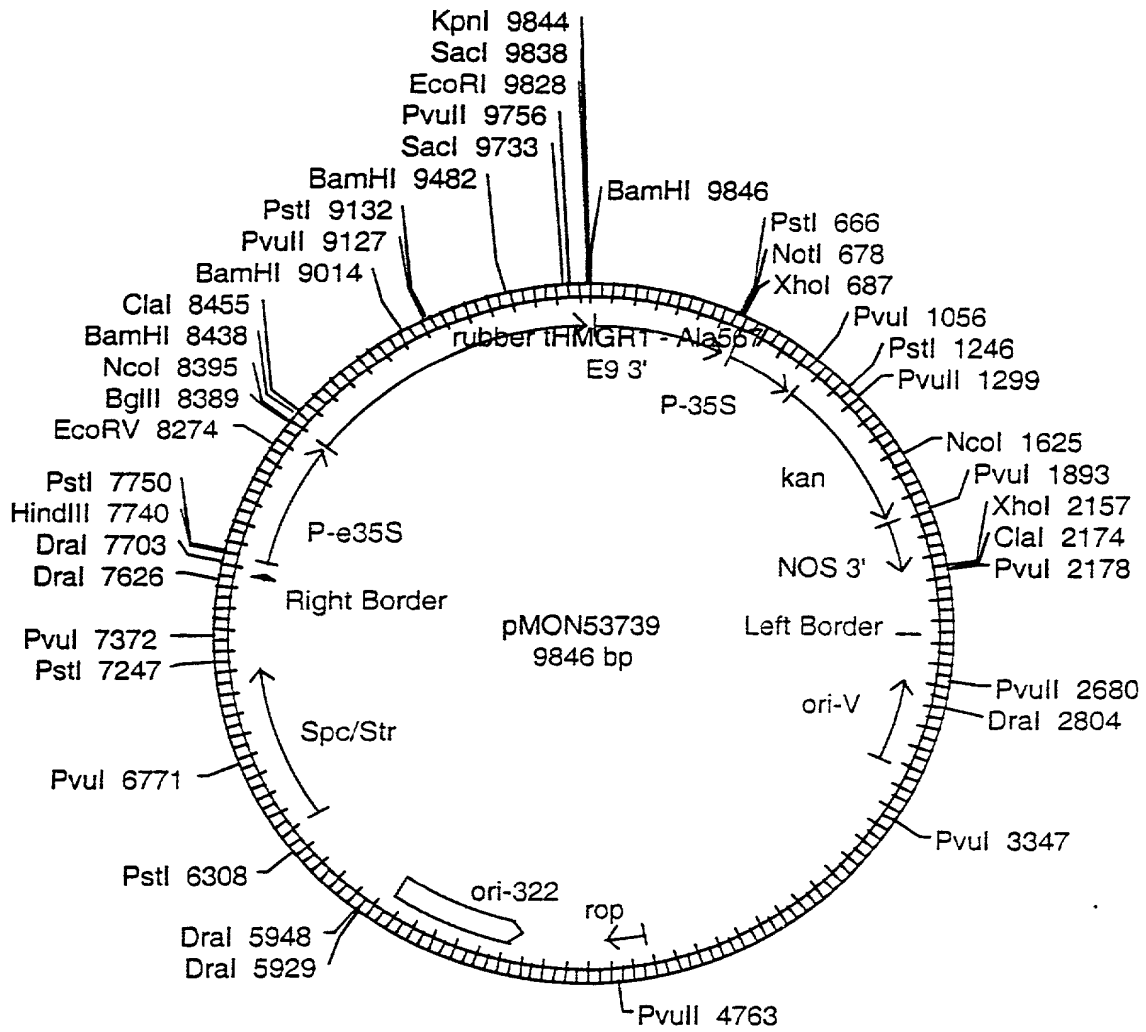


Figure 19: Construct pMON53739

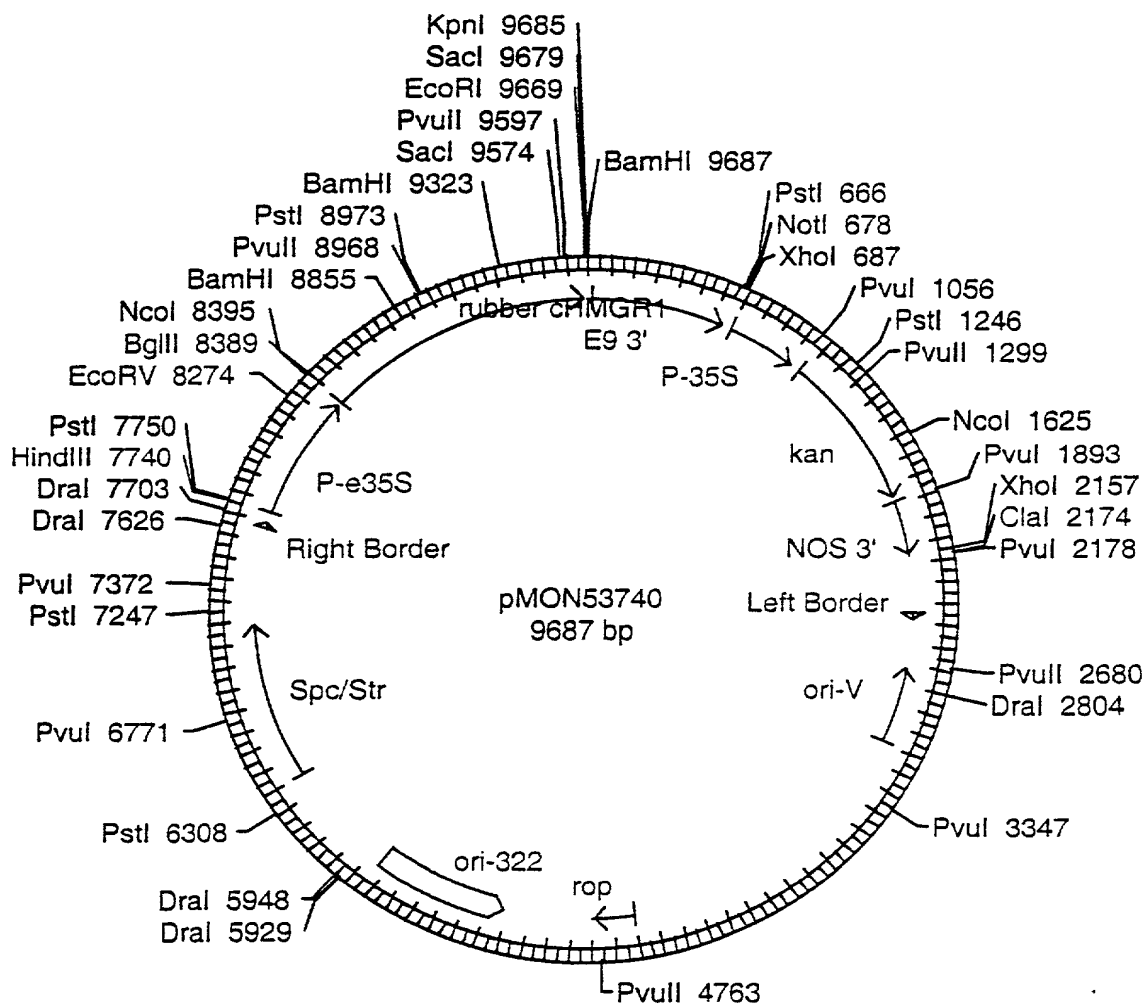


Figure 20: Construct pMON53740

FIG. 21

Comparison of Cycloartenol Levels in Transgenic Plants

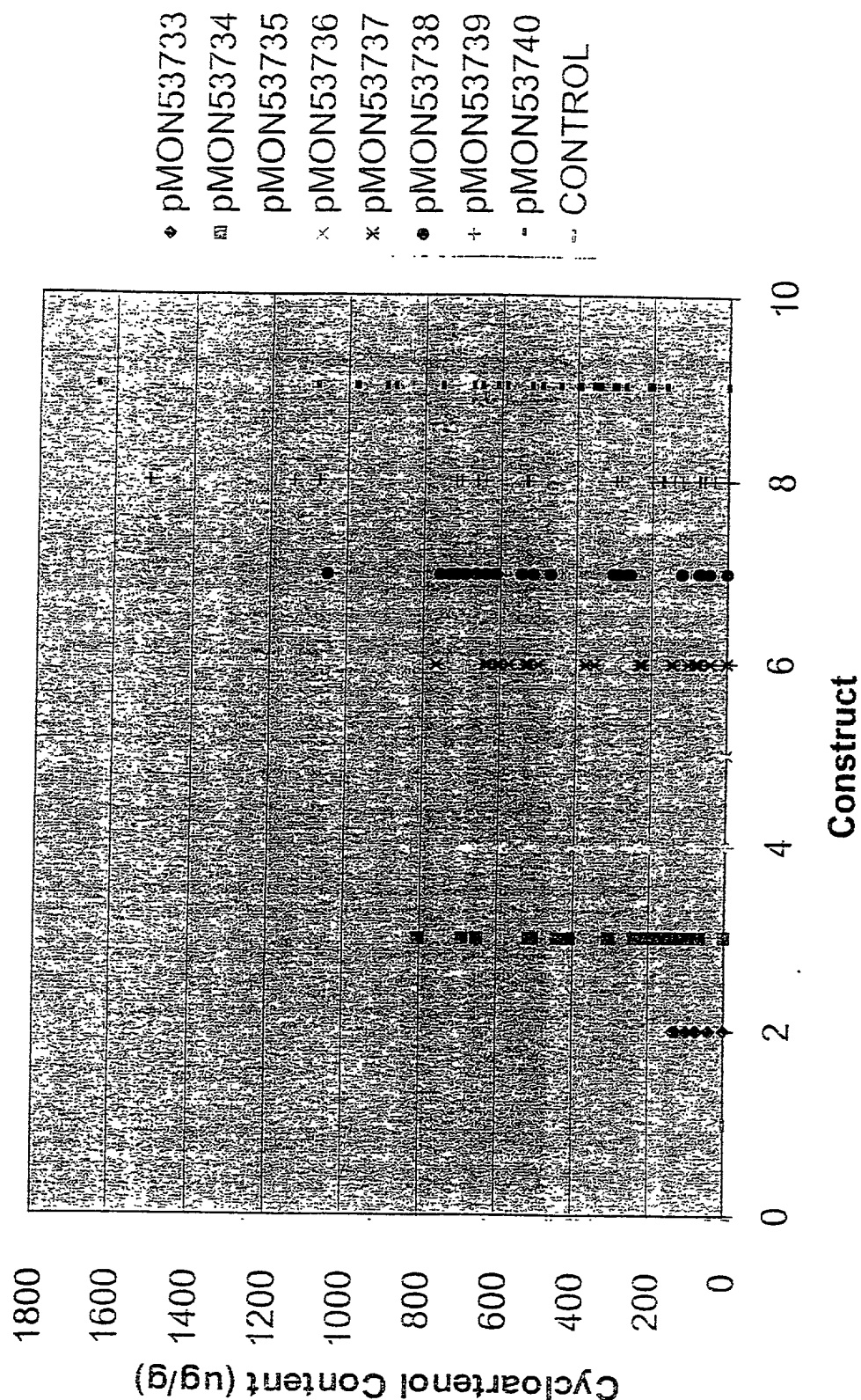


FIG. 22

Comparison of 24-Methylene Cycloartenol in Transgenic Plants

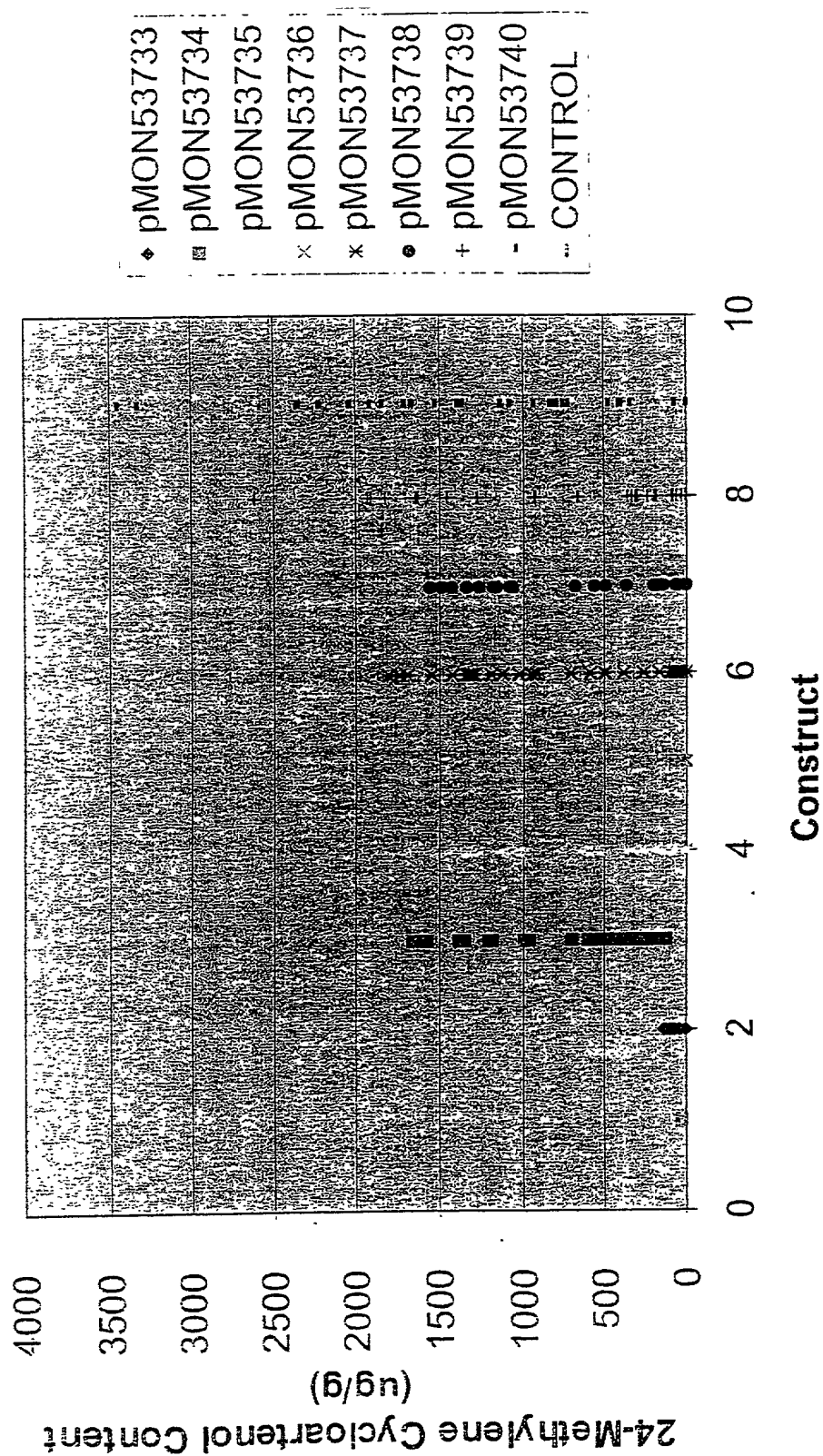


FIG. 23

Comparison of Obtusifolioside Levels in Transgenic Plants

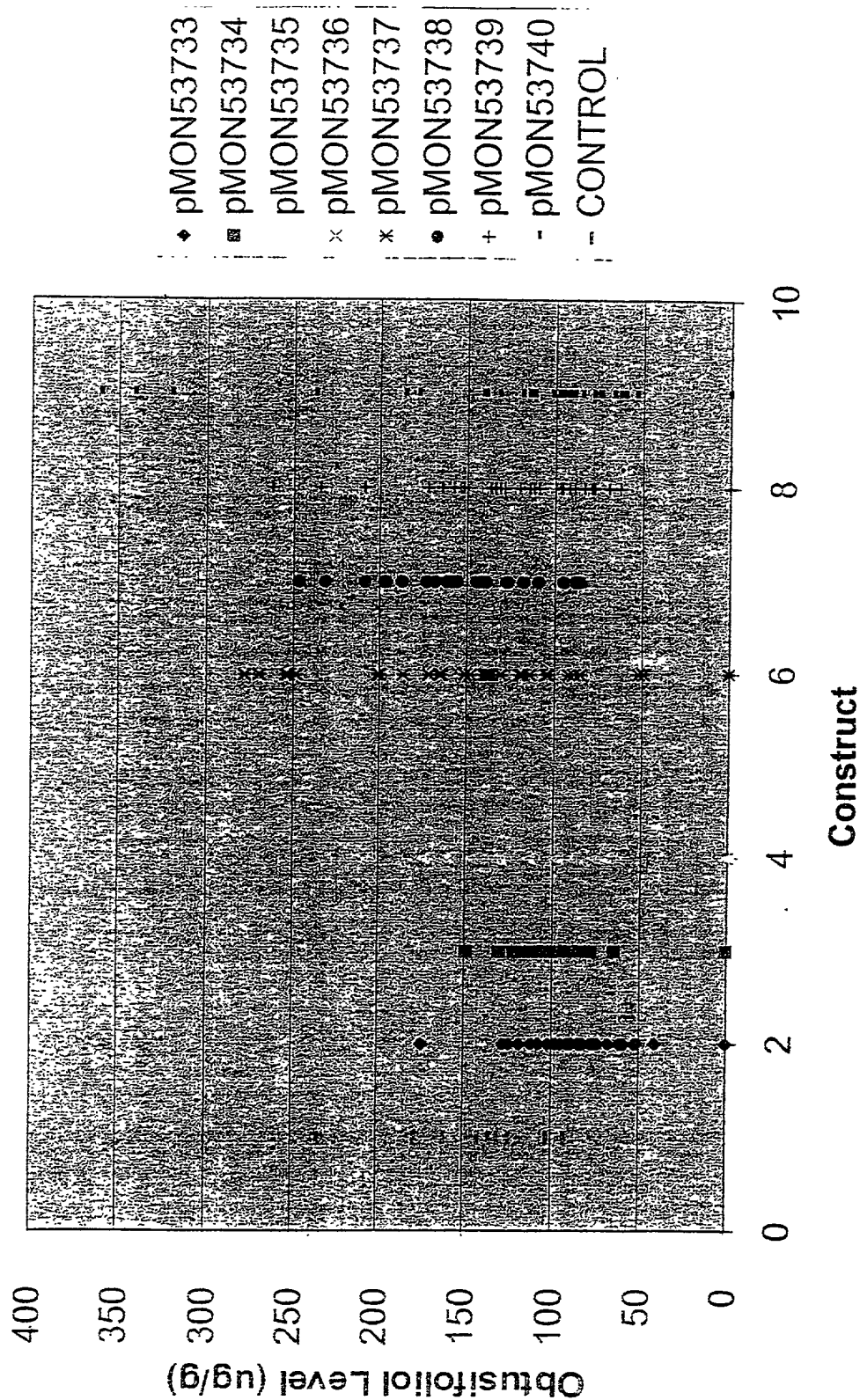


FIG. 24

Comparison of Campesterol Levels in Transgenic Plants

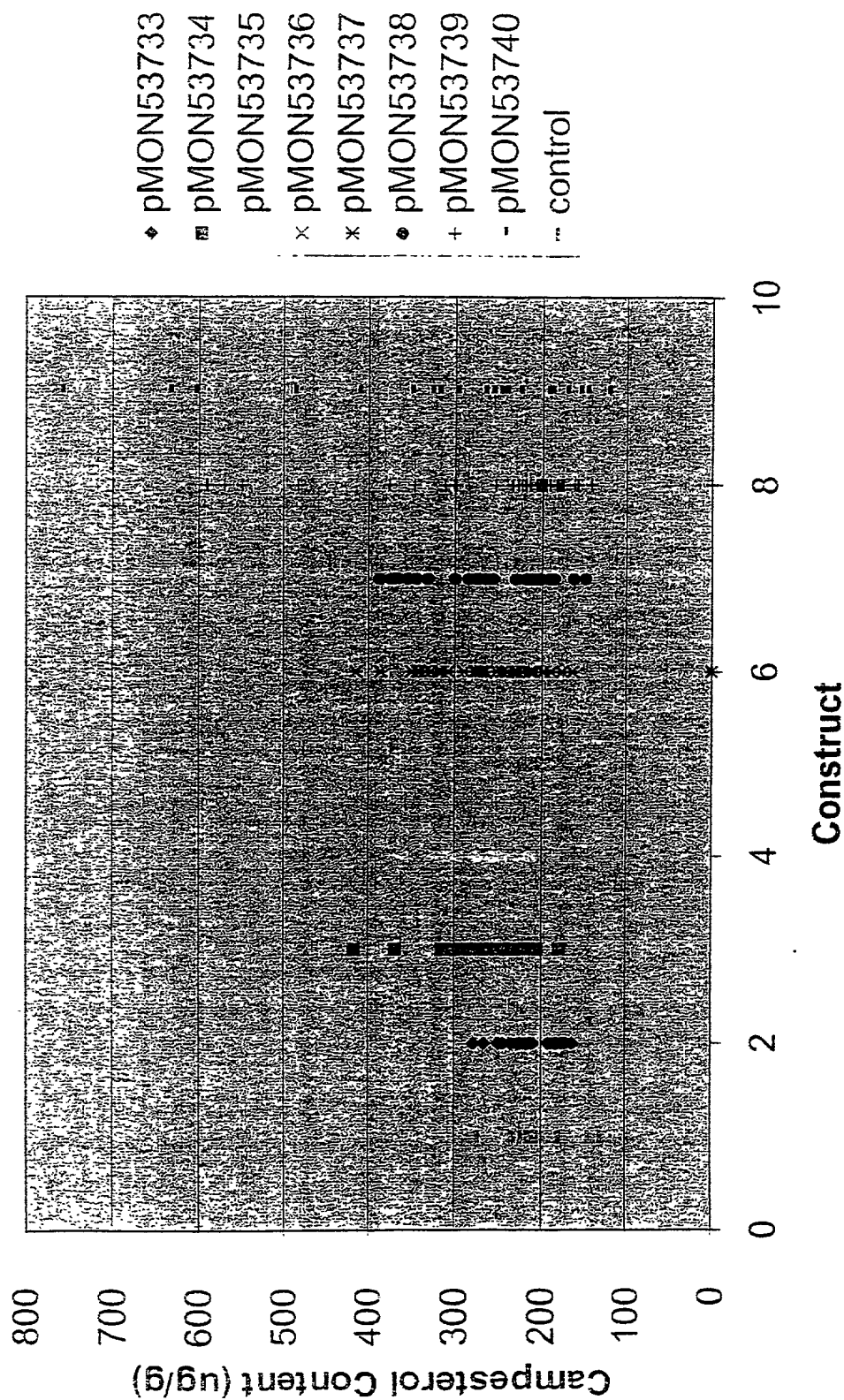
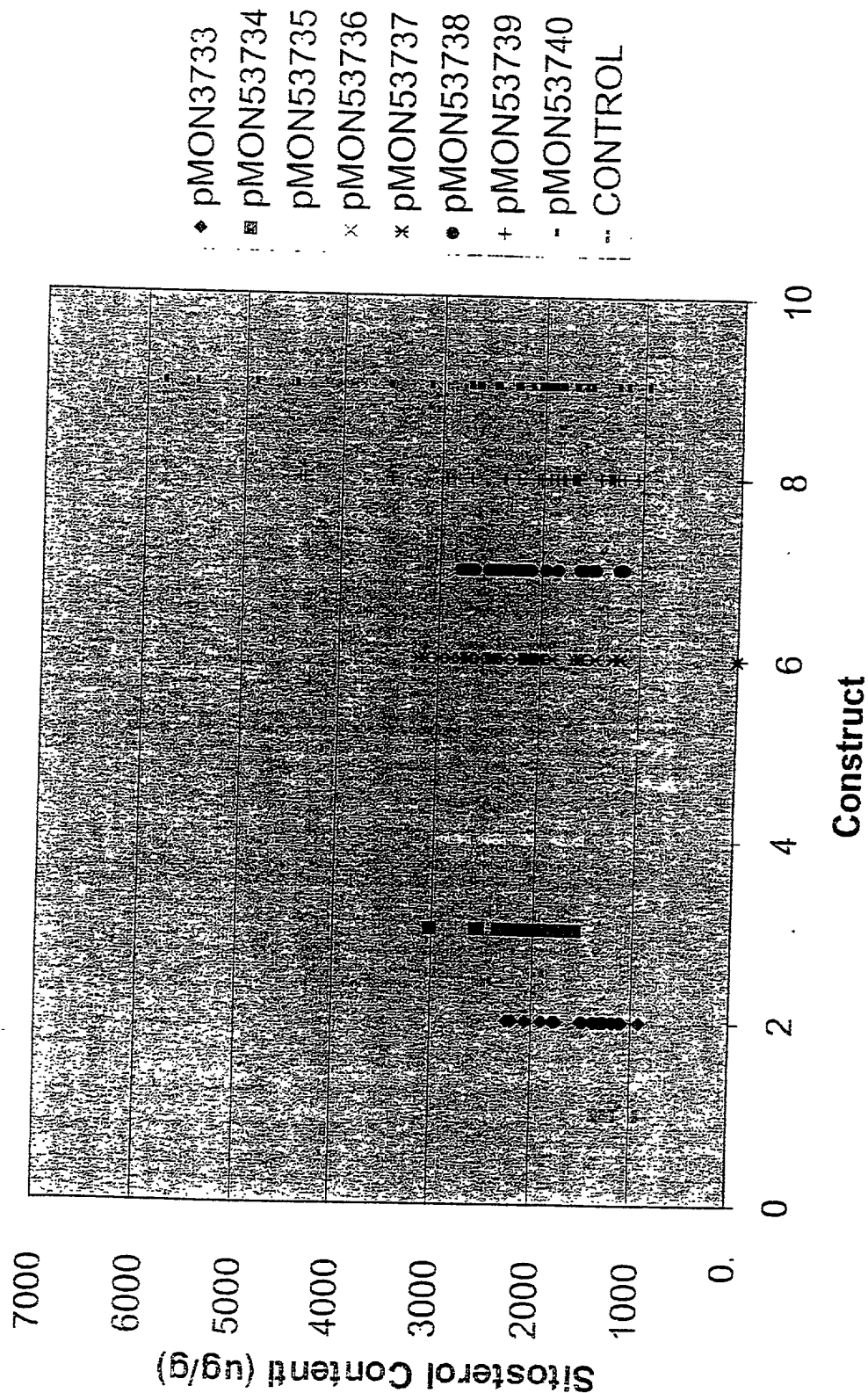


FIG. 25

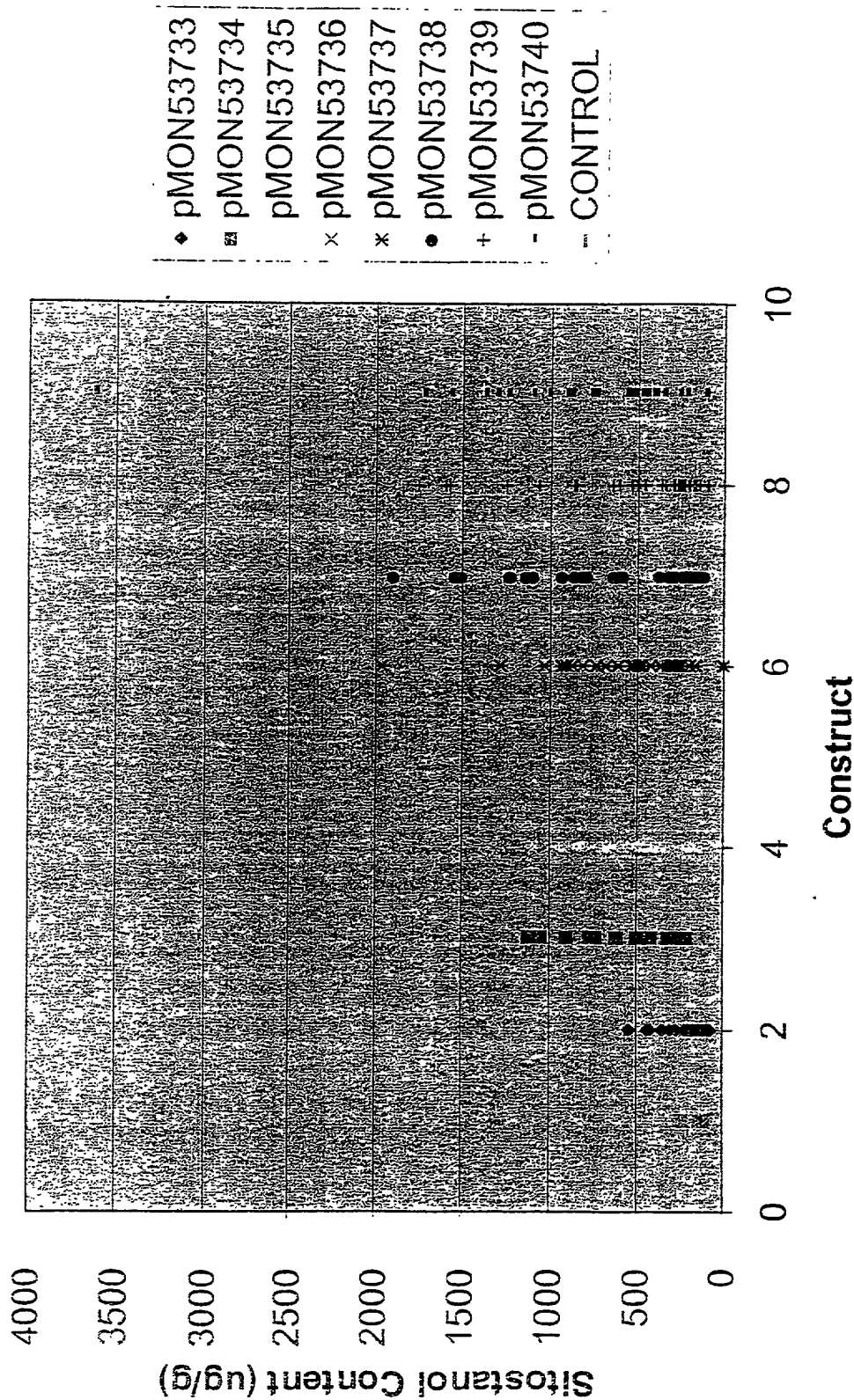
Comparison of Sitosterol Levels in Transgenic Plants



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FIG. 26

Comparison of Sitostanol Levels in Transgenic Plants



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FIG. 27

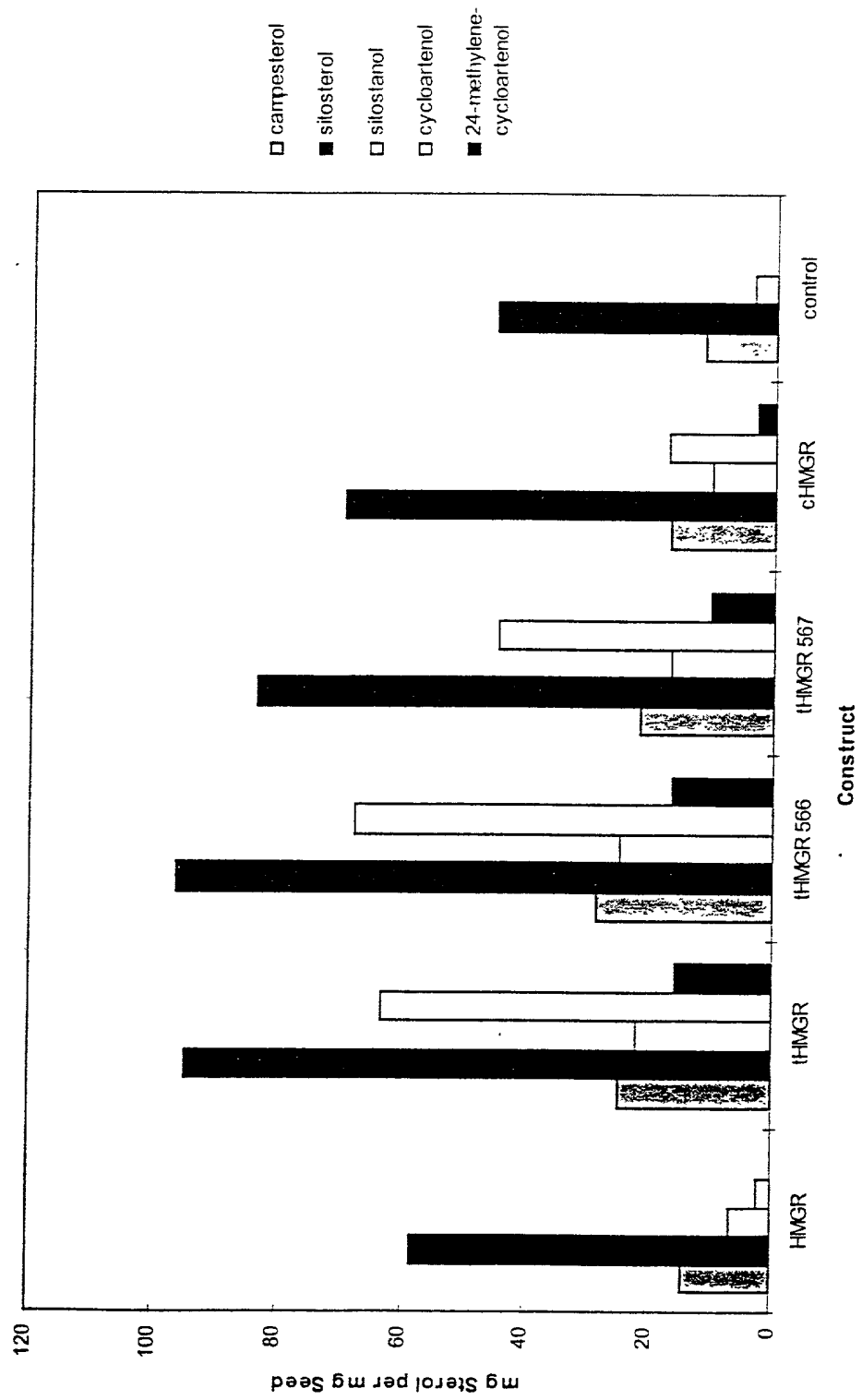
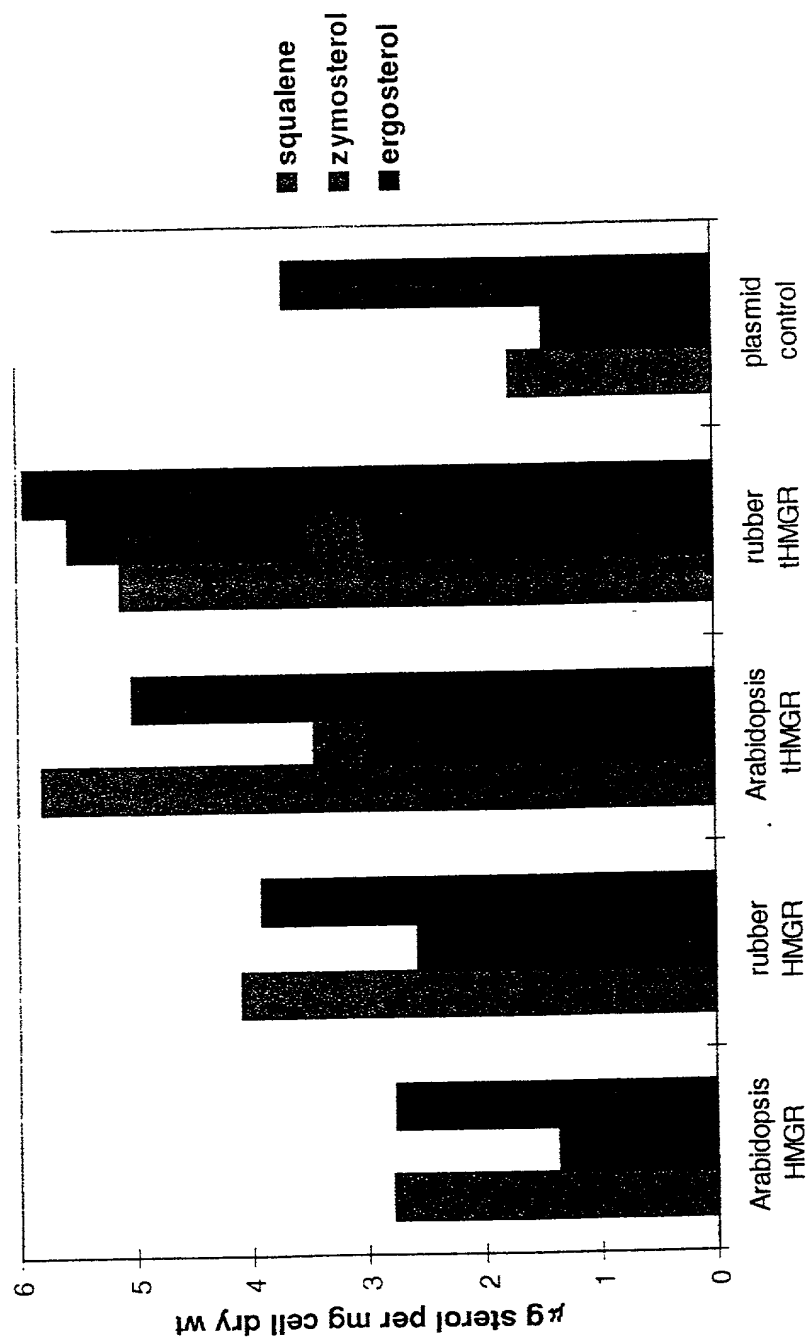


FIG. 28

Plant HMGR Constructs in Yeast HMGR1 Knockout Mutant



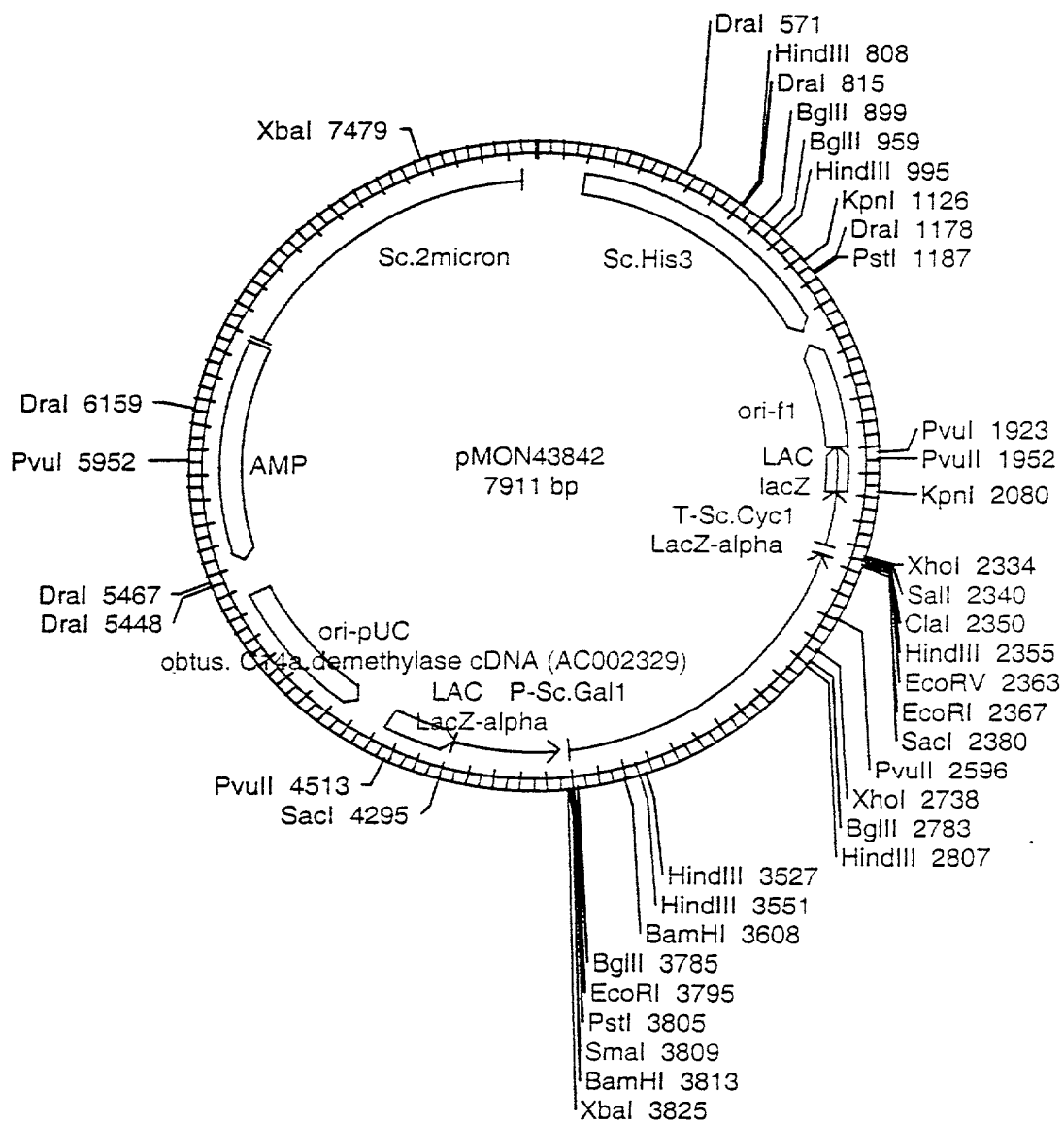


Figure 29: Construct pMON43842

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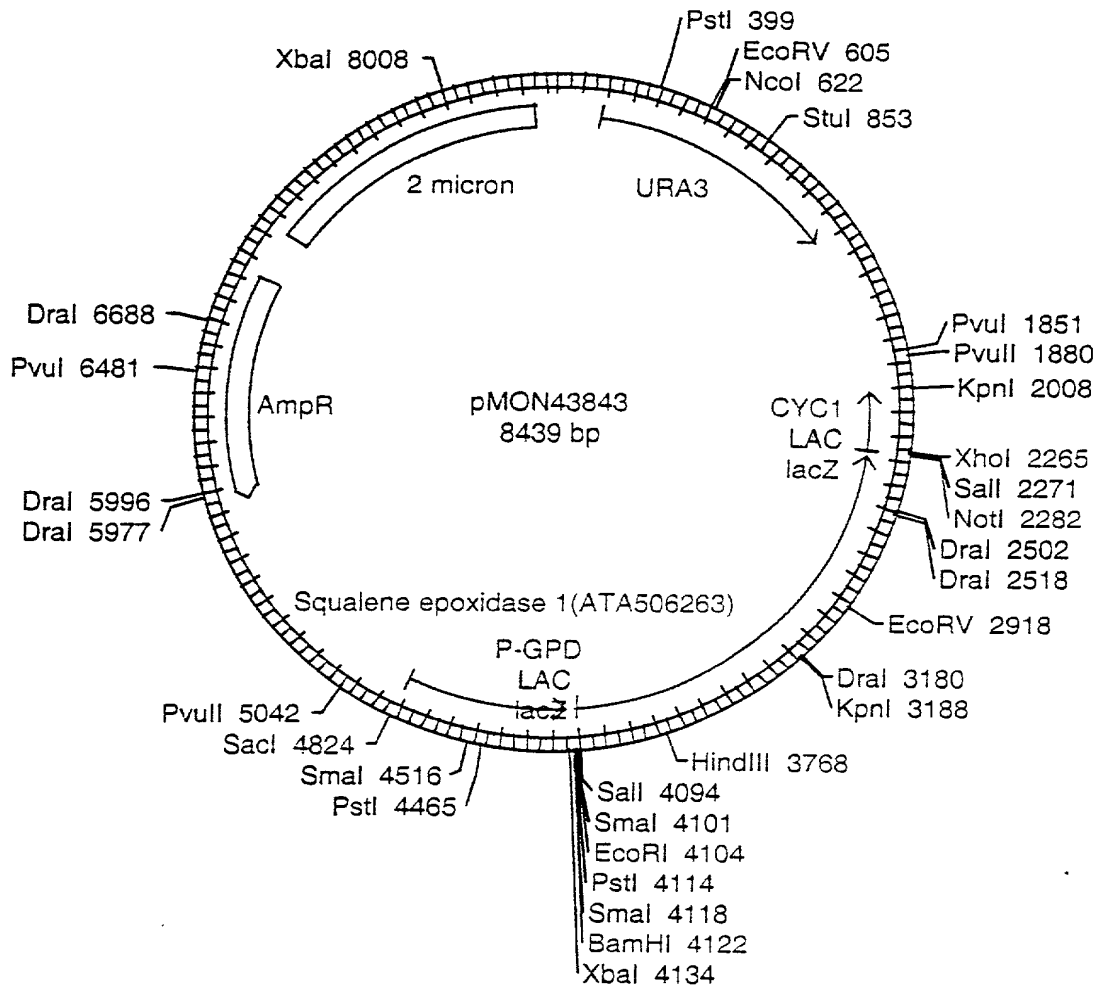


Figure 30: Construct pMON43843

099527-229850

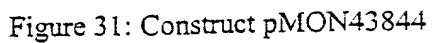


Figure 31: Construct pMON43844

FIG. 32A

Plurality: 5.00 Threshold: 4 AveWeight 1.00 AveMatch 2.91 AvMisMatch -2.00
1

```

50
  HMGRclustalW{methanobac} .....
  .....
  HMGRclustalW{methanococ} .....
  .....
  HMGRclustalW{halobacter} .....
  .....
  HMGRclustalW{sulfolobus} .....
  .....
  HMGRclustalW{      yeast2} MSLPLKTIIVH LVKPFACAR FSARYPIHVI VVAVLLSAAA
YLSVTQSYLN
  HMGRclustalW{      yeast1} MPPLFKGLKQ MAKPIAYVSR FSAKRPIHII LFSLIISAF
YLSVIQYYFN
  HMGRclustalW{phycomyces} .....
  .....
  HMGRclustalW{  fusarium} .....
  .....
  HMGRclustalW{  candida} .....
  .....
  HMGRclustalW{dictyoste2} .....
  .....
  HMGRclustalW{wheat1} .....
  .....
  HMGRclustalW{      rice} .....
  .....
  HMGRclustalW{  corn} .....
  .....
  HMGRclustalW{wheat3} .....
  .....
  HMGRclustalW{wheat2} .....
  .....
  HMGRclustalW{      soybean} .....
  .....
  HMGRclustalW{rubbertre3} .....
  .....
  HMGRclustalW{rosyperiwi} .....
  .....
  HMGRclustalW{  tomato} .....
  .....
  HMGRclustalW{woodtobacc} .....
  .....
  HMGRclustalW{  potato} .....
  .....
  HMGRclustalW{radish} .....
  .....
  HMGRclustalW{arabadopsis1} .....
  .....
  HMGRclustalW{cucumismel} .....
  .....
  HMGRclustalW{rubbertre2} .....
  .....
  HMGRclustalW{rubbertre1} .....
  .....
  HMGRclustalW{camptothec} .....
  .....
  HMGRclustalW{arabadops2} .....
  .....
  HMGRclustalW{chineseham} .....
  .....

```

099527-4340
"E225850"

FIG. 32B

| | |
|---------------------------|-------|
| HMGRclustalW{chineseha2} | ..... |
| | |
| HMGRclustalW{syrianhamst} | ..... |
| | |
| HMGRclustalW{ rat} | ..... |
| | |
| HMGRclustalW{ rabbit} | ..... |
| | |
| HMGRclustalW{ human} | ..... |
| | |
| HMGRclustalW{ mouse} | ..... |
| | |
| HMGRclustalW{ xenopus} | ..... |
| | |
| HMGRclustalW{sea urchin} | ..... |
| | |
| HMGRclustalW{ cockroach} | ..... |
| | |
| HMGRclustalW{drosophila} | ..... |
| | |
| HMGRclustalW{dictyoste1} | ..... |
| | |
| HMGRclustalW{schistosom} | ..... |
| | |
| HMGRclustalW{archaeoglo} | ..... |
| | |
| HMGRclustalW{pseudomonas} | ..... |
| | |
| Consensus | ----- |

0985723 123404

FIG. 32C

| | | | | | |
|----------------------------|------------|------------|------------|-------------|------------|
| 100 | 51 | | | | |
| HMGRclustalW{methanobac} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{methanococ} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{halobacter} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{sulfolobus} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{ yeast2} | EWKLDSN.QY | STYLSIKPDE | LF EKCTHYR | SPVSDTWKLL | |
| SSKEAADIYT | | | | | |
| HMGRclustalW{ yeast1} | GWQLDSNSVF | ETAPNKDSNT | LFQEC SHYR | DSSL DGWVSI | |
| TAHEASELPA | | | | | |
| HMGRclustalW{phycomyces} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{ fusarium} | ..... | ..... | ..... | MDH | EGCQGQHPQQ |
| CCQWVSNAWS | | | | | |
| HMGRclustalW{ candida} | ..... | ..... | ..... | MFYH | GASANQHWA |
| VDDL SKVPVD | | | | | |
| HMGRclustalW{dictyoste2} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{wheat1} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{ rice} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{ corn} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{wheat3} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{wheat2} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{ soybean} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{rubbertre3} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{rosyperiwi} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{ tomato} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{woodtobacc} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{ potato} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{radish} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{arabadopsis1} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{cucumismel} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{rubbertre2} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{rubbertrel} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{camptothec} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{arabadops2} | ..... | ..... | ..... | ..... | ..... |
| | | | | | |
| HMGRclustalW{chineseham} | ..... | ..... | ..... | ..... | MLSRLFRMH |
| GLFVASHPWE | | | | | |
| HMGRclustalW{chineseha2} | ..... | ..... | ..... | ..... | MLSRLFRMH |

09885723 "123404

FIG. 32D

| | | | |
|---------------------------|-----------|-------|----------------|
| GLFVASHPWE | | | |
| HMGRclustalW{syrianhamst} | ..... |  | .MLSRLFRMH |
| GLFVASHPWE | | | |
| HMGRclustalW{ rat} | ..... |  | .MLSRLFRMH |
| GLFVASHPWE | | | |
| HMGRclustalW{ rabbit} | ..... |  | .MLSRLFRMH |
| GLFVASHPWE | | | |
| HMGRclustalW{ human} | ..... |  | .MLSRLFRMH |
| GLFVASHPWE | | | |
| HMGRclustalW{ mouse} | ..... |  |  |
| | | | |
| HMGRclustalW{ xenopus} | ..... |  | .MLSRLFRMH |
| GQFVASHPWE | | | |
| HMGRclustalW{sea urchin} | ..... |  | .MLSRLFLAQ |
| GRFCSSHPWE | | | |
| HMGRclustalW{ cockroach} | ..... |  | .MVGRLFRAH |
| GQFCASHPWE | | | |
| HMGRclustalW{drosophila} | ..... |  | .MIGPLFRAT |
| .QFCASHPWE | | | |
| HMGRclustalW{dictyostel} | ..... |  |  |
| | | | |
| HMGRclustalW{schistosom} | ..... |  |  |
| | | | |
| HMGRclustalW{archaeoglo} | ..... |  |  |
| | | | |
| HMGRclustalW{pseudomonas} | ..... |  |  |
| | | | |
| | Consensus | ----- | -----MLSRLFRMH |
| GLFVASHPWE | | | |

09885723 "433401

FIG. 32E

| | | |
|---------------------------|---|-------|
| 150 | | 101 |
| HMGRclustalW{methanobac} | ..... | ..... |
| | | |
| HMGRclustalW{methanococ} | ..... | ..... |
| | | |
| HMGRclustalW{halobacter} | ..... | ..... |
| | | |
| HMGRclustalW{sulfolobus} | ..... | ..... |
| | | |
| HMGRclustalW{ yeast2} | PFHYLSTIS FQSKDNSTTL PSLDDVIYSV DHTRYLLSEE | |
| PKIPTELVSE | | |
| HMGRclustalW{ yeast1} | PHHYLLNLN FNSPNETDSI PELANTVFEK DNTKYILQED | |
| LSVSKEISST | | |
| HMGRclustalW{phycomyces} | ..... | ..... |
| | | |
| HMGRclustalW{ fusarium} | EFLDLLKNAE TLDIVIMLLG YIAMHLTFVS LFLSMRKMG | |
| KFWLGICTLF | | |
| HMGRclustalW{ candida} | VDHYNVVPFQ FRRAGEYKEP VLSGIVELDE VKFVVSQSDA | |
| AEQWQQLTAE | | |
| HMGRclustalW{dictyoste2} | ..... | ..... |
| | | |
| HMGRclustalW{wheat1} | ..... | ..... |
| | | |
| HMGRclustalW{ rice} | ..... | ..... |
| | | |
| HMGRclustalW{ corn} | ..... | ..... |
| | | |
| HMGRclustalW{wheat3} | ..... | ..... |
| | | |
| HMGRclustalW{wheat2} | ..... | ..... |
| | | |
| HMGRclustalW{ soybean} | ..... | ..... |
| | | |
| HMGRclustalW{rubbertre3} | ..... | ..... |
| | | |
| HMGRclustalW{rosyperiwi} | ..... | ..... |
| | | |
| HMGRclustalW{ tomato} | ..... | ..... |
| | | |
| HMGRclustalW{woodtobacc} | ..... | ..... |
| | | |
| HMGRclustalW{ potato} | ..... | ..... |
| | | |
| HMGRclustalW{radish} | ..... | ..... |
| | | |
| HMGRclustalW{arabadosis1} | ..... | ..... |
| | | |
| HMGRclustalW{cucumismel} | ..... | ..... |
| | | |
| HMGRclustalW{rubbertre2} | ..... | ..... |
| | | |
| HMGRclustalW{rubbertrel} | ..... | ..... |
| | | |
| HMGRclustalW{camptothec} | ..... | ..... |
| | | |
| HMGRclustalW{arabados2} | ..... | ..... |
| | | |
| HMGRclustalW{chineseham} | VIVGTVT..L TICMMSMN.. MFTGNK... | ..... |
| | | |

0985723-123401

FIG. 32F

HMGRclustalW{chineseha2} VIVGTVT..L TICMMSMN.. MFTGNNK... ..

 HMGRclustalW{syrianhamst} VIVGTVT..L TICMMSMN.. MFTGNNK... ..

 HMGRclustalW{ rat} VIVGTVT..L TICMMSMN.. MFTGNNK... ..

 HMGRclustalW{ rabbit} VIVGTVT..L TICMMSMN.. MFTGNDK... ..

 HMGRclustalW{ human} VIVGTVT..L TICMMSMN.. MFTGNNK... ..

 HMGRclustalW{ mouse}

 HMGRclustalW{ xenopus} VIVGTVT..L TICMMSMN.. MFTGNDK... ..

 HMGRclustalW{sea urchin} VIVCTLT..L TICMLSMN.. YFTGLPR... ..

 HMGRclustalW{ cockroach} VIVATLT..L TVCMLTVDQ. RPLGLP.... ..

 HMGRclustalW{drosophila} VIVALLT..I TACMLNGGQE QYPGCEQRIG HSTASAAAAG
 SGSGAGSGAS
 HMGRclustalW{dictyostel}

 HMGRclustalW{schistosom}

 HMGRclustalW{archaeoglo}

 HMGRclustalW{pseudomonas}

 Consensus VIVGTVT--L TICMMSMN-- MFTGNNK--- -----

FIG. 32G

200
 HMGRclustalW{methanobac}

 HMGRclustalW{methanococ}

 HMGRclustalW{halobacter}

 HMGRclustalW{sulfolobus}

 HMGRclustalW{ yeast2} NGTKWRLRNN SNFILDHLNI YRNMVKQFSN KTSEFDQFDL
 FIILAAYLTL
 HMGRclustalW{ yeast1} DGTKWRLRSD RKSLEFDVKTL AYSLYDVFSE NVTQADPFDDV
 LIMVTAYLMM
 HMGRclustalW{phycomyces}

 HMGRclustalW{ fusarium} SSVFAFLFGL VVTTKLGVPI SVILLSEGLP FLVVTIGFEK
 NIVLTRAIVMS
 HMGRclustalW{ candida} DGTWVRSRAY HGKLGKYSMD AVGAFNKVLN LVRGAETFDI
 ALVTCAYIAM
 HMGRclustalW{dictyoste2}

 HMGRclustalW{wheat1}

 HMGRclustalW{ rice}

 HMGRclustalW{ corn}

 HMGRclustalW{wheat3}

 HMGRclustalW{wheat2}

 HMGRclustalW{ soybean}

 HMGRclustalW{rubbertre3}

 HMGRclustalW{rosyperiwi}

 HMGRclustalW{ tomato}

 HMGRclustalW{woodtobacc}

 HMGRclustalW{ potato}

 HMGRclustalW{radish}

 HMGRclustalW{arabadopsis1}

 HMGRclustalW{cucumismel}

 HMGRclustalW{rubbertre2}

 HMGRclustalW{rubbertrel}

 HMGRclustalW{camptothec}

 HMGRclustalW{arabadops2}

 HMGRclustalW{chineseham} I CGWNYEC.PK FEEDVLSSDI
 IILTITRCIA

0906723-123101

FIG. 32H

```

      HMGRclustalW{chineseha2} .....I CGWNYEC.PK FEEDVLSSDI
IILTITRCIA
      HMGRclustalW{syrianhamst} .....I CGWNYEC.PK FEEDVLSSDI
IILTITRCIA
      HMGRclustalW{      rat} .....I CGWNYEC.PK FEEDVLSSDI
IILTITRCIA
      HMGRclustalW{      rabbit} .....I CGWNYEC.PK FEEDVLSSDI
IILTITRCIA
      HMGRclustalW{      human} .....I CGWNYEC.PK FEEDVLSSDI
IILTITRCIA
      HMGRclustalW{      mouse} .....
.....
      HMGRclustalW{      xenopus} .....I CGWNYAC.PK FEEDVLSSDI
IILTITRCIA
      HMGRclustalW{sea urchin} .....I CGWNYECAPQ VKESSLSSDV
LVMCIMRTLA
      HMGRclustalW{ cockroach} ..... PGWGHNC..I TLEEYNAADM
IVMTLIRCVA
      HMGRclustalW{drosophila} GTIPPSSMGG SATSSRHRPC HGWSQSC.DG LEAEYNAADV
ILMTIVRCTA
      HMGRclustalW{dictyostel} .....
.....
      HMGRclustalW{schistosom} .....M LKILNTVLLF FDCFSTGTFF
VLLIYLFTRL
      HMGRclustalW{archaeoglo} .....
.....
      HMGRclustalW{pseudomonas} .....
.....
Consensus -----I CGWNYEC-PK FEEDVLSSDI
IILTITRCIA

```

FIG. 32I

| 250 | 201 |
|----------------------------|---|
| HMGRclustalW{methanobac} | |
| | |
| HMGRclustalW{methanococ} | |
| | |
| HMGRclustalW{halobacter} | |
| | |
| HMGRclustalW{sulfolobus} | |
| | |
| HMGRclustalW{ yeast2} | FYTLCCLFND MRKIGSKFWL SFSALSNSAC ALYLSLYTTH |
| SLLKKPASLL | |
| HMGRclustalW{ yeast1} | FYTIFGLFND MRKTGSNFWL SASTVVNSAS SLFLALYVTQ |
| CILGKEVSAL | |
| HMGRclustalW{phycomyces} | |
| | |
| HMGRclustalW{ fusarium} | HAIEHRR IQA QNSKSGKRSP DGSTQNM IQY AVQAAIKEKG |
| FEIIRDYAIE | |
| HMGRclustalW{ candida} | FYTILFNLFAR MRAVGSKVWL GLSTLVSSFF AFLFALYITT |
| RVLDSLIPFL | |
| HMGRclustalW{dictyoste2} | |
| | |
| HMGRclustalW{wheat1} | |
| | |
| HMGRclustalW{ rice} | |
| | |
| HMGRclustalW{ corn} | |
| | |
| HMGRclustalW{wheat3} | |
| | |
| HMGRclustalW{wheat2} | |
| | |
| HMGRclustalW{ soybean} | |
| | |
| HMGRclustalW{rubbertre3} | |
| | |
| HMGRclustalW{rosyperiwi} | |
| | |
| HMGRclustalW{ tomato} | |
| | |
| HMGRclustalW{woodtobacc} | |
| | |
| HMGRclustalW{ potato} | |
| | |
| HMGRclustalW{radish} | |
| | |
| HMGRclustalW{arabidopsis1} | |
| | |
| HMGRclustalW{cucumismel} | |
| | |
| HMGRclustalW{rubbertre2} | |
| | |
| HMGRclustalW{rubbertre1} | |
| | |
| HMGRclustalW{camptothec} | |
| | |
| HMGRclustalW{arabidops2} | |
| | |
| HMGRclustalW{chineseham} | ILYIYFQFQN LRQLGSKYIL GIAGLFTIFS SFVFSTVVIH |
| | |

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FIG. 32J

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HMGRclustalW{chineseha2} ILYIYFQFQN LRQLGSKYIL GIAGLFTIFS SFVFSTVVIH
.....
HMGRclustalW{syrianhamst} ILYIYFQFQN LRQLGSKYIL GIAGLFTIFS SFVFSTVVIH
.....
HMGRclustalW{      rat} ILYIYFQFQN LRQLGSKYIL GIAGLFTIFS SFVFSTVVIH
.....
HMGRclustalW{      rabbit} ILYIYFQFQN LRQLGSKYIL GIAGLFTIFS SFVFSTVVIH
.....
HMGRclustalW{      human} ILYIYFQFQN LRQLGSKYIL GIAGLFTIFS SFVFSTVVIH
.....
HMGRclustalW{      mouse} .....
.....
HMGRclustalW{      xenopus} ILYIYFQFQN LRQLGSKYIL GIAGLFTIFS SFVFSTVVIH
.....
HMGRclustalW{sea urchin} VAYLYLQFTK LRTTGSKYIL GIAGLFTIFS SFLFSSAVIH
.....
HMGRclustalW{cockroach} VLYSYYQFCH LQKLGSKYIL GIAGLFTVFS SFVFSSSVIN
.....
HMGRclustalW{drosophila} VLYCYYQFCS LHRLGSKYVL GIAGLFTVFS SFIFTTAAIK
.....
HMGRclustalW{dictyostel} .....
.....
HMGRclustalW{schistosom} RTHLLHFSSS NCHLDVIIYQ SRAVIIIFLVV FVYFIGVLTC
KINDKILVHT
HMGRclustalW{archaeoglo} .....
.....
HMGRclustalW{pseudomonas} .....
.....

Consensus ILYIYFQFQN LRQLGSKYIL GIAGLFTIFS SFVFSTVVIH -----
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FIG. 32K

300
 HMGRclustalW{methanobac}

 HMGRclustalW{methanococ}

 HMGRclustalW{halobacter}

 HMGRclustalW{sulfolobus}

 HMGRclustalW{ yeast2} SLVIGLPFIV VIIG.FKHKV RLAAFSLQKF HRISIDKKIT
 VSNIIYEAMF
 HMGRclustalW{ yeast1} TLFEGLPFIV VVVG.FKHKI KIAQYALEKF ERVGLSKRIT
 TDEIVFESVS
 HMGRclustalW{phycomyces}

 HMGRclustalW{ fusarium} IVILVIGAAS GVQGGLOQFC FLAAWTLF.F DFILLFTFYT
 AILSIKLRST
 HMGRclustalW{ candida} SLSEGIPFFV AVVG.FNNKI LLAEKVLQ.N QLNAQSSKND
 APTVLYQALR
 HMGRclustalW{dictyoste2}

 HMGRclustalW{wheat1}

 HMGRclustalW{ rice}

 HMGRclustalW{ corn}M EVRG..... .GVGQGSAAAR
HPPA
 HMGRclustalW{wheat3}

 HMGRclustalW{wheat2}

 HMGRclustalW{ soybean}

 HMGRclustalW{rubbertre3}M DEVRRRPP.K HIVRKDHGGE
 VLNSFSHG..
 HMGRclustalW{rosyperiwi}M DSRRRSP... TVTAKAAAGE
 LPLAPHEGQ.
 HMGRclustalW{ tomato}M DVRRRSEEPV YPSKVFAADE
 KPLKPHKKQQ
 HMGRclustalW{woodtobacc}M DVRRRSEKPA YPTKEFAAGE
 KPLKPHK...
 HMGRclustalW{ potato}M DVRRRPVKPL YTSKDASAG.
 EPLKQGE..
 HMGRclustalW{radish}M DIRR..RPPK PPVNSN....
 ...RFLDNRS
 HMGRclustalW{arabadosis1}M DLRR..RPPK PPVTNNNSN
 GSFRSYQPRT
 HMGRclustalW{cucumismel}M DRRRSLRPPR PNAVQDADAT
 CTFRRDEQDA
 HMGRclustalW{rubbertre2}

 HMGRclustalW{rubbertre1}M DTTG..RLH.HR....
KHAT
 HMGRclustalW{camptothec}M DVRRRSINSI HQIPSVGGTA
 PPMLKPKOPT
 HMGRclustalW{arabados2}M EDLRRRFPTK KNGEEISN..

 HMGRclustalW{chineseham} FLDKELTGLN EALPFFLLLI DLSRASALAK FALSSNSQDE
 VRENIARGMA

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FIG. 32L

HMGRclustalW{chineseha2} FLDKELTGLN EALPFFLLLI DLSRASALAK FALSSNSQDE
 VRENIARGMA
 HMGRclustalW{syrianhamst} FLDKELTGLN EALPFFLLLI DLSRASALAK FALSSNSQDE
 VRENIARGMA
 HMGRclustalW{ rat} FLDKELTGLN EALPFFLLLI DLSRASALAK FALSSNSQDE
 VRENIARGMA
 HMGRclustalW{ rabbit} FLDKELTGLN EALPFFLLLI DLSRASALAK FALSSNSQDE
 VRENIARGMA
 HMGRclustalW{ human} FLDKELTGLN EALPFFLLLI DLSRASTLAK FALSSNSQDE
 VRENIARGMA
 HMGRclustalW{ mouse}

 HMGRclustalW{ xenopus} FLDKELTGLN EALPFFLLLI DLSKASALAK FALSSNSQDE
 VRDNIARGMA
 HMGRclustalW{sea urchin} LFGLELTGLN EALPFFLLLI DLTKASALTK FALSSTTQNE
 VVDNIARGMA
 HMGRclustalW{ cockroach} FLGSDVSDLK DALFFFLLLI DLSKATVLAQ FALSSRSQDE
 VKHNIARGMA
 HMGRclustalW{drosophila} FLGSDISELK DALFFLLLLVI DLSNSGRLRS GAMGSN.QAE
 VTQNIARGMA
 HMGRclustalW{dictyostel}

 HMGRclustalW{schistosom} MLRNKRQLNT LFYTLILFTF ALCSLSSVLF VPYTSFAIFL
 LSTSVFLLFS
 HMGRclustalW{archaeoglo}

 HMGRclustalW{pseudomonas}

 Consensus FLDKELTGLN EALPFFLLL- DL-RASALAK FALSSNSQDE
 VRENIARGMA

FIG. 32M

350
 HMGRclustalW{methanobac}

 HMGRclustalW{methanococ}

 HMGRclustalW{halobacter}

 HMGRclustalW{sulfolobus}

 HMGRclustalW{ yeast2} QEGAYLIRDY LFYISSFIGC AIYARHLPGL VNFCILSTFM
 LVFDLLLSAT
 HMGRclustalW{ yeast1} EGGRLIQDH LLCIFAFIGC SMYAHQLKTL TNFCILSAFI
 LIFELILTPT
 HMGRclustalW{phycomyces}

 HMGRclustalW{ fusarium} VSSVMSICVW PLRMMASRRV AENVAKGDDE LNRVRGDAPL
 FGRKSSSIPK
 HMGRclustalW{ candida} EQGPLLLRDH LFMITAFLGC SFYASYLDGL KNFCILAALI
 LAFDILTST
 HMGRclustalW{dictyoste2}

 HMGRclustalW{wheat1}

 HMGRclustalW{ rice}MRIT.....
 ...NGLAMVS
 HMGRclustalW{ corn} PE....PSRAAA RVQAGDALPL PIRHT.....
 ...NLIFSAL
 HMGRclustalW{wheat3}

 HMGRclustalW{wheat2}

 HMGRclustalW{ soybean}

 HMGRclustalW{rubbertre3}HH L.....PP LKPSDYSLPL SLYLA.....
 ...NALVFSL
 HMGRclustalW{rosyperiwi}NQ Q.....PS IPRSSDVLPL PLYLA.....
 ...NGVFFTL
 HMGRclustalW{ tomato} QQ....QEDK N.....TL LIDASDALPL PLYLTT....
 ...NGLFFTM
 HMGRclustalW{woodtobacc} QQ....QEOD N.....SL LI.ASDALPL PLYLT.....
 ...NGLFFTM
 HMGRclustalW{ potato}VS SPKASDALPL PLYLT.....
 ...NGLFFTM
 HMGRclustalW{radish} DD....DDRR K.....TLTS PPKASDALPL PLYLT.....
 ...NAVFFTL
 HMGRclustalW{arabadopsis1} SD....DDHR RR..ATTIAP PPKASDALPL PLYLT.....
 ...NAVFFTL
 HMGRclustalW{cucumismel} SA....ADHL KR.....A SPKASDALPL PLYLT.....
 ...NTIFFTL
 HMGRclustalW{rubbertre2}

 HMGRclustalW{rubbertre1} PV....EDRS P.....T TPKASDALPL PLYLT.....
 ...NAVFFTL
 HMGRclustalW{camptothec} KV....DAVD L.....PD SPKASDALPL PLYIT.....
 ...NGVFFTL
 HMGRclustalW{arabadops2}VAVDPP LRKASDALPL PLYLT.....
 ...NTFFLSL
 HMGRclustalW{chineseham} ILGPTFTLDA LV..ECLVIG VGTMSGVRQL EIMCCFGCMS
 VLANYFVFMT

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FIG. 32N

```

HMGRclustalW{chineseha2}  ILGPTFTLDA LV..ECLVIG VGTMSGVRQL EIMCCFGCMS
VLANYFVFMT
HMGRclustalW{syrianhamst}  ILGPTFTLDA LV..ECLVIG VGTMSGVRQL EIMCCFGCMS
VLANYFVFMT
HMGRclustalW{      rat}    ILGPTFTLDA LV..ECLVIG VGTMSGVRQL EIMCCFGCMS
VLANYFVFMT
HMGRclustalW{      rabbit}  ILGPTFTLDA LV..ECLVIG VGTMSGVRQL EIMCCFGCMS
VLANYFVFMT
HMGRclustalW{      human}   ILGPTFTLDA LV..ECLVIG VGTMSGVRQL EIMCCFGCMS
VLANYFVFMT
HMGRclustalW{      mouse}   .....
.....
HMGRclustalW{      xenopus}  ILGPTFTLEA LV..ECLVIG VGTMSGVRQL EIMCCFGCMS
VLANYFAFMT
HMGRclustalW{sea urchin}    ILGPTITLDT VV..TTLVIS IGTMSIRKM EVFCCFGILS
LIANYFVFMT
HMGRclustalW{cockroach}     MLGPTITLDT VV..ETLVIG VGMLSGVRRL EVLCCFACMS
VIVNYVVFMT
HMGRclustalW{drosophila}     LLGPAISLDT IV..VLLVG  VGTLSGVQRL EVLCMFAVLS
VLVNYVVFMT
HMGRclustalW{dictyostel}     .....M LFAPPNLETK ELFWIY.IL
ILIPKVFAKV
HMGRclustalW{schistosom}     DLSVFFIVLE YLLEIELVN YEHAHRHCLL SHLFSNQLFV
DHMLGMFLKT
HMGRclustalW{archaeoglo}     .....
.....
HMGRclustalW{pseudomonas}    .....
.....
Consensus  ILGPTFTLDA LV--ECLVIG VGTASD-LPL -LYCTFGCMS
VLANYFFFMT

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FIG. 320

400
 HMGRclustalW{methanobac}

 HMGRclustalW{methanococ}

 HMGRclustalW{halobacter}

 HMGRclustalW{sulfolobus}

 HMGRclustalW{ yeast2} FYSAILSMKL EINIIHRSTV IRQTL..EED GVVPTTADII
 YKDETASEPH
 HMGRclustalW{ yeast1} FYSAILALRL EMNVIHRSTI IKQTL..EED GVVPTSTARI
 SKAEKKS SVSS
 HMGRclustalW{phycomyces}

 HMGRclustalW{ fusarium} FKVLMILGFI FVNIVNICSI PFRNP..SSM STIRTWASSL
 GGVIAPLSVD
 HMGRclustalW{ candida} FLSAILSLKL EINQIHRSTL LREQ..EDD GLTETTVDV
 LKSNLAGTK
 HMGRclustalW{dictyoste2}

 HMGRclustalW{wheat1}

 HMGRclustalW{ rice} LVLSSCDLVR LCSDRER... PL.....GGREFA
 TVVCQLASV
 HMGRclustalW{ corn} FAASLAYLMR RWREKIRSST PLHA.....VGLAEML
 AIFGLVASLI
 HMGRclustalW{wheat3}

 HMGRclustalW{wheat2}

 HMGRclustalW{ soybean}

 HMGRclustalW{rubbertre3} FFSVAYFLLH RWREKIRKST PLHI.....VTFPEIA
 ALICLVASVI
 HMGRclustalW{rosyperiwi} FFSVMYFLLT RWREKIRNAT PLHV.....VTLSELA
 ALASLIASVI
 HMGRclustalW{ tomato} FFSVMYFLLS RWREKIRNST PLHV.....VTLSELG
 AIVSLIASVI
 HMGRclustalW{woodtobacc} FFSVMYLLS RWREKIRNST PLHV.....VTFSELV
 AIASLIASVI
 HMGRclustalW{ potato} FFSVMYFLLV RWREKIRNSI PLHV.....VTLSELL
 AMVSLIASVI
 HMGRclustalW{radish} FFSVAYYLLH RWRDKIRYNT PLHV.....VTVTELG
 AIVALIASFI
 HMGRclustalW{arabidopsis1} FFSVAYYLLH RWRDKIRYNT PLHV.....VTITELG
 AIIALIASFI
 HMGRclustalW{cucumismel} FFSVAYYLLH RWRDKIRNST PLHV.....VTLSEIA
 AIVSLMASFI
 HMGRclustalW{rubbertre2}

 HMGRclustalW{rubbertre1} FFSVAYYLLH RWRDKIRNST PLHI.....VTLSEIV
 AIVSLIASFI
 HMGRclustalW{camptothec} FFTVYVYLLV RWREKIRNST PLHV.....VTLSEIA
 AIFTFVASFI
 HMGRclustalW{arabidops2} FFATVYFLLS RWREKIRNST PLHV.....VDLSEIC
 ALIGFVASFI
 HMGRclustalW{chineseham} FFPACVSLVL ELSRESREGR PIWQ...LSH FARVLEEEE.
 NKPVPVTQRV

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FIG. 32P

HMGRclustalw{chineseha2} FFPACVSLVL ELSRESREGR PIWQ...LSH FARVLEEEEE.
 NKPNPVTQRV
 HMGRclustalw{syrianhamst} FFPACVSLVL ELSRESREGR PIWQ...LSH FARVLEEEEE.
 NKPNPVTQRV
 HMGRclustalw{ rat} FFPACVSLVL ELSRESREGR PIWQ...LSH FARVLEEEEE.
 NKPNPVTQRV
 HMGRclustalw{ rabbit} FFPACVSLVL ELSRESREGR PIWQ...LSH FARVLEEEEE.
 NKPNPVTQRV
 HMGRclustalw{ human} FFPACVSLVL ELSRESREGR PIWQ...LSH FARVLEEEEE.
 NKPNPVTQRV
 HMGRclustalw{ mouse}

 HMGRclustalw{ xenopus} FFPACVSLVL ELSRESREGR PIWQ...LSQ FASVLEEEED
 NKPNPVTQRV
 HMGRclustalw{sea urchin} FFPACLSLVL ELSNSNKYGR PVWH...LGR FAEVLEEEED
 RKPVPVQRV
 HMGRclustalw{ cockroach} FYPACLSLIL ELSRSGESGR PAWHD..KSL IIKALHEED.
 QKPVPVQRV
 HMGRclustalw{drosophila} FYPACLSLIF DLSRSGVDMS VVREKAKGSL PLKSLTEEE.
 QKANPVLQRV
 HMGRclustalw{dictyostel} MSVRELFPPF KWGFNIRRSN FLVP..... ILSNNVI
 VTGEEAVQYE
 HMGRclustalw{schistosom} SLFSISTTSK YAYLESIFKC TLMEQIIYIM IVFVFLPSFM
 RIFASYAKRM
 HMGRclustalw{archaeoglo}

 HMGRclustalw{pseudomonas}

 Consensus FFSACYSLLL -WRRKIRNST PLHV---LSH FARVTLEEEA AKPN-
 VASRI

| | | | | | |
|-------------|----------------------------|------------|-------------|------------|------------|
| 450 | HMGRclustalW{methanobac} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{methanococ} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{halobacter} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{sulfolobus} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{ yeast2} | FLRSNVAILL | GKASVIGLLL | LINLYVF... | .TDKLNATII |
| NTVYFDSTIY | HMGRclustalW{ yeast1} | FLNLSVVVII | MKLSVILLFV | FINFYNF... | GANWVN.DAF |
| NSLYFDKERV | HMGRclustalW{phycomyces} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{ fusarium} | PFKVASNGLD | AILPTAKSNN | RPTLVTV... | LTPIKYELEY |
| PSIHYALGSA | HMGRclustalW{ candida} | TFTDAPSTLV | TVAKVAGVSV | FFGLHPY... | GFGSAWLSDL |
| SAGNETNDTF | HMGRclustalW{dictyoste2} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{wheat1} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{ rice} | YLLSLFAHPD | APATTTGDDD | ..... | ..... |
| ..... | HMGRclustalW{ corn} | YLLSFFGIAF | VQSIVSSGDD | ..... | ..... |
| ..... | HMGRclustalW{wheat3} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{wheat2} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{ soybean} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{rubbertre3} | YLLGFFGIGF | VHSFS.RAST | ..... | ..... |
| ..... | HMGRclustalW{rosyperiwi} | YLVSFFGLDF | VQSIIYKPNN | ..... | ..... |
| ..... | HMGRclustalW{ tomato} | YLLGFFGIGF | VQTFVSRGNN | ..... | ..... |
| ..... | HMGRclustalW{woodtobacc} | YLLGFFGIGF | VQSFVSRDNN | ..... | ..... |
| ..... | HMGRclustalW{ potato} | YLLGFFGIGF | VQSFVSRSNS | ..... | ..... |
| ..... | HMGRclustalW{radish} | YLLGFFGIDF | VQSFI SRP.. | ..... | ..... |
| ..... | HMGRclustalW{arabidopsis1} | YLLGFFGIDF | VQSFI SRASG | ..... | ..... |
| ..... | HMGRclustalW{cucumismel} | YLLGFFGIDF | VQSFI ARSSP | ..... | ..... |
| ..... | HMGRclustalW{rubbertre2} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{rubbertrel} | YLLGFFGIDF | VQSFI ARASH | ..... | ..... |
| ..... | HMGRclustalW{camptothec} | YLLGFFGIGL | VQPFTSRSSH | ..... | ..... |
| ..... | HMGRclustalW{arabidops2} | YLLGFCGIDL | IFRSS..SD. | ..... | ..... |
| | HMGRclustalW{chineseham} | KMIMSLGLVL | VHAHSRWIAD | PSPQNST... | TE.HSKVSLG |
| LDDEDVSKRIE | | | | | |

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FIG. 32R

HMGRclustalW{chineseha2} KMIMSLGLVL VHAHSRWIAD PSPQNST... TE.HSKVSLG
 LDEDVSKRIE
 HMGRclustalW{syrianhamst} KMIMSLGLVL VHAHSRWIAD PSPQNST... TE.HSKVSLG
 LDEDVSKRIE
 HMGRclustalW{ rat} KMIMSLGLVL VHAHSRWIAD PSPQNST... AE.QSKVSLG
 LAEDVSKRIE
 HMGRclustalW{ rabbit} KMIMSLGLVL VHAHSRWIAD PSPQNST... AD.NSKVSLG
 LDENVSKRIE
 HMGRclustalW{ human} KMIMSLGLVL VHAHSRWIAD PSPQNST... AD.TSKVSLG
 LDENVSKRIE
 HMGRclustalW{ mouse}

 HMGRclustalW{ xenopus} KMIMSLGLVL VHAHSRWIAD PSSQNST... SISDHEVTM
 LDDMMPKRVE
 HMGRclustalW{sea urchin} KMIMRTGLVL VHAHSRWLASNDT... ELMSRDMLYD
 GNLLTDKKID
 HMGRclustalW{ cockroach} KVIMSAGLML VHAH.RWVRCL.

 HMGRclustalW{drosophila} KLIMTTGLMA VHIYSREVSPAAT... TMVDKTLTPT
 LSLNVSNRT
 HMGRclustalW{dictyostel} KPLPYIPQHN QQQQQKQQPS

 HMGRclustalW{schistosom} YGEQKKCLVS NKGVSSTRK RRHSYSSGHS YVEYRMSVH
 NLIGYVNP
 HMGRclustalW{archaeoglo}

 HMGRclustalW{pseudomonas}

 Consensus YLL-FFG-VL V-A-SR-ISD PSPQNST--- ----SKVSLG LDE-
 VSKRIE

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FIG. 32S

451

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```

HMGRclustalW{methanobac} .....
.....
HMGRclustalW{methanococ} .....
.....
HMGRclustalW{halobacter} .....
.....
HMGRclustalW{sulfolobus} .....
.....
HMGRclustalW{    yeast2} SLPNFINYKD IGNLSNQVII SVLPKQYYTP LKKYHQIEDS
VLLIIDSVS
HMGRclustalW{    yeast1} SLPDFITSNA SENFKEQAIV SVTPLLYYKP IKSQRIEDM
VLLLLLNVS
HMGRclustalW{phycomyces} .....
.....
HMGRclustalW{    fusarium} ASNPAYN.DA FHHHFQGYGV GGRMVGGILK SLEDPVLSKW
IVIALALSVA
HMGRclustalW{    candida} TLYDAVA.DQ IPIGSNGTLV TLFPTRFLLP EKLSTQIEAV
VLSFIGLIST
HMGRclustalW{dictyoste2} .....
.....
HMGRclustalW{wheat1} .....
.....
HMGRclustalW{    rice} ..D.....
.....
HMGRclustalW{    corn} ..DEDFLVGS G.....
.....
HMGRclustalW{wheat3} .....
.....
HMGRclustalW{wheat2} .....
.....
HMGRclustalW{    soybean} .....
.....
HMGRclustalW{rubbertre3} ..D.SWDVEE Y.....D DDNIIKEDT
R.....
HMGRclustalW{rosyperiwi} ..E.GWEIEE ..... ..EILMVEDS
RN.....
HMGRclustalW{    tomato} ..D.SWDE.. .....N DEEFLLKEDS
RC.....
HMGRclustalW{woodtobacc} ..DECWDEED E.....N DEQFLLEEDS
RR.....
HMGRclustalW{    potato} ..D.SWDIED E.....N AEQLIIEEDS
RR.....
HMGRclustalW{radish} ..D.SGDSE ..... ..DFDDH
R.....
HMGRclustalW{arabadopsis1} ..D.AWDLAD T.....I .....DDDDH
R.....
HMGRclustalW{cucumismel} ..D.AWDLED ..... ..EIDRT
L.....
HMGRclustalW{rubbertre2} .....
.....
HMGRclustalW{rubbertrel} ..D.VWDLED T.....D P.NYLIDEDH
R.....
HMGRclustalW{camptothec} ..DDVWGVD DE.....D VDEIVLKEDT
R.....
HMGRclustalW{arabadops2} ..DDVWVNDG .....
.....
HMGRclustalW{chineseham} PSVSLWQFYL SKMISMDIEQ VVTLSLAFLL AVKYIFFEQA
ET..ESTLSL

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FIG. 32T

HMGRclustalW{chineseha2} PSVSLWQFYL SKMISMDIEQ VVTLSLAFLL AVKYIFFEQA
 ET..ESTLSL
 HMGRclustalW{syrianhamst} PSVSLWQFYL SKMISMDIEQ VVTLSLAFLL AVKYIFFEQA
 ET..ESTLSL
 HMGRclustalW{ rat} PSVSLWQFYL SKMISMDIEQ VITLSLALLL AVKYIFFEQA
 ET..ESTLSL
 HMGRclustalW{ rabbit} PSVSLWQFYL SKMISMDIEQ VITLSLALLL AVKYIFFEQA
 ET..ESTLSL
 HMGRclustalW{ human} PSVSLWQFYL SKMISMDIEQ VITLSLALLL AVKYIFFEQT
 ET..ESTLSL
 HMGRclustalW{ mouse}

 HMGRclustalW{ xenopus} PSMPLWQFYL SRMVTMDVEQ IITLGLALLL AVKYIFFEQT
 ET..ESTFSM
 HMGRclustalW{sea urchin} PTMPLWEFYA TRLWPPTLDY ILTAILATVL ASHYIFFSDL
 ATYPEKRVSI
 HMGRclustalW{ cockroach} .SIALWPDLT S.....LRY FCTHCDTGVS YSRWSFASEG
 EE..LPTVKL
 HMGRclustalW{drosophila} ESGEIADIII KWL.T.MSADH IVISIVLIAL VVKFICFDNR
 DP...LPDQL
 HMGRclustalW{dictyostel} ..QDYIQQPQN....DNN
 IN.....
 HMGRclustalW{schistosom} CHYKCWSTTF VIFVSLIILH LNNRYSERIS SFKHNSSENE
 VFPVLYHITA
 HMGRclustalW{archaeoglo}

 HMGRclustalW{pseudomonas}

 Consensus PSDSLWDFY- SKMISMDIEQ VVTLSLA-LL AVKYIFFED- RT--
 ESTLSL

FIG. 32U

550

HMGRclustalW{methanobac}

 HMGRclustalW{methanococ}

 HMGRclustalW{halobacter}

 HMGRclustalW{sulfolobus}

 HMGRclustalW{ yeast2} AIRDQFISKL LFFAFAVSIS INVYLLNAAK IHTGYMNFQ.
 .. PQSNKIDD
 HMGRclustalW{ yeast1} AIRDRFVSKL VLSALVCSAV INVYLLNAAR IHTSYTADQL
 VKTEVTKKSF
 HMGRclustalW{phycomyces}

 HMGRclustalW{ fusarium} LNGYLFNVAR WGIKDPNVPE HNIDRNELAR AREFNDTGS.
AT
 HMGRclustalW{ candida} AARDKYISKF ILFAFAVSAS INVYLLNVAR IHTTRLEDA.
IE
 HMGRclustalW{dictyoste2}

 HMGRclustalW{wheat1}

 HMGRclustalW{ rice}

 HMGRclustalW{ corn}

 HMGRclustalW{wheat3}

 HMGRclustalW{wheat2}

 HMGRclustalW{ soybean}

 HMGRclustalW{rubbertre3}

 HMGRclustalW{rosyperiwi}G.....

 HMGRclustalW{ tomato}G.....

 HMGRclustalW{woodtobacc}G.....

 HMGRclustalW{ potato}G.....

 HMGRclustalW{radish}

 HMGRclustalW{arabadopsis1}

 HMGRclustalW{cucumismel}

 HMGRclustalW{rubbertre2}

 HMGRclustalW{rubbertre1}

 HMGRclustalW{camptothec}

 HMGRclustalW{arabadops2}

 HMGRclustalW{chineseham} KN..PITSPV VTPKKAPDNC CRREPLLVR SEKLSSVEEE
 PGVSQDRKVE

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FIG. 32V

HMGRclustalW{chineseha2} KN..PITSPV VTPKKAPDNC CRREPLLVRN SEKLSSVEEE
 PGVSQDRKVE
 HMGRclustalW{syrianhamst} KN..PITSPV ATPKKAPDNC CRREPVLRR NEKLSSVEEE
 PGVNQDRKVE
 HMGRclustalW{ rat} KN..PITSPV VTPKKAQDNC CRREPLLVRN NQKLSSVEED
 PGVNQDRKVE
 HMGRclustalW{ rabbit} KN..PITSPV VTQKKVPDSC CRREPVVVRN NQKFCSSVEEE
 AGMSQDRKVE
 HMGRclustalW{ human} KN..PITSPV VTQKKVPDNC CRREPMVRN NQKCDSSVEEE
 TGINRERKVE
 HMGRclustalW{ mouse}

 HMGRclustalW{ xenopus} KN..PIISPV AVQKKQIESC CRREPEQ.EK TVHVSSTEEA
 S..SKEETEA
 HMGRclustalW{sea urchin} MEGHEVVNPG SDHEDASEVE TIGTLSSSPS TSDVRVIESM
 TSRTQACQTD
 HMGRclustalW{ cockroach} VTGDSVVNSN STDDAQLHYI IMRWLTV..S ADHIVILILL
 LALAVKFVFF
 HMGRclustalW{drosophila} RQ....SGPV AIEAKASQTT PIDEHVE..QEKD
 TENSAAVRTL
 HMGRclustalW{dictyostel}

 HMGRclustalW{schistosom} YEVTSIFHFI YNIFHVINAN LVVYLFLGLF LFKRIRLNKP
 INSQRLNINI
 HMGRclustalW{archaeoglo}

 HMGRclustalW{pseudomonas}

 Consensus KN--PITSPV VT-KKAPDNC CRREPLLVRN --K-SSVEEE, -G-
 SQDRKVE

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FIG. 32W

| | |
|---------------------------|---|
| 600 | 551 |
| HMGRclustalW{methanobac} | |
| | |
| HMGRclustalW{methanococ} | |
| | |
| HMGRclustalW{halobacter} | |
| | |
| HMGRclustalW{sulfolobus} | ..... |
| | |
| HMGRclustalW{ yeast2} | LVVQQKSATI EFSET..... RSMPTA SSGLETPVTA |
| KDIIISEEIQ | |
| HMGRclustalW{ yeast1} | TAPVQKASTP VLTN..... KTVIS GSKVKSLSSA |
| QSSSSGPPSS | |
| HMGRclustalW{phycomyces} | ..... |
| | |
| HMGRclustalW{ fusarium} | LPLGEYVPPT PMRTQ..... PSTPA ITDDEAEG.. |
| ..LHMTKARP | |
| HMGRclustalW{ candida} | LKKPKKKASK TAVSV..... PKAVV VKDSETTKSS |
| EILHSSSESE | |
| HMGRclustalW{dictyoste2} | ..KGKSVNVE DLKDQ..... EIIAL VDKGEIQP.. |
| ...HNLETRL | |
| HMGRclustalW{wheat1} | ..... |
| | |
| HMGRclustalW{ rice} |GQG GSR..... ..RA.....A |
| PPEPAPMHGH | |
| HMGRclustalW{ corn} |SSGS AAA..... ..PSRQHAQA |
| PAPCELLGSP | |
| HMGRclustalW{wheat3} | ..... |
| | |
| HMGRclustalW{wheat2} | ..... |
| | |
| HMGRclustalW{ soybean} | ..... |
| | |
| HMGRclustalW{rubbertre3} |PTG AC..... ..AAPSLDCS |
| LSLPTKIHAP | |
| HMGRclustalW{rosyperiwi} | ..T..NCTTL GC..... ..AVPPPSVP |
| KIAPVVPQQP | |
| HMGRclustalW{ tomato} | ..P...ATTL GC..... ..AVPAPPAR |
| QIAPMAPPQP | |
| HMGRclustalW{woodtobacc} | ..P...ATTL GCT..... ..AVPPPPAL |
| QIVPMVPPQP | |
| HMGRclustalW{ potato} | ..PCAAATTL GC..... ..VVPPPPVR |
| KIAPMVPQQP | |
| HMGRclustalW{radish} |LVTC PPP..... ..PPP....S |
| QIVAACLPNP | |
| HMGRclustalW{arabadosis1} |LVTC SPP..... ..TP..... |
| IVSVAKLPNP | |
| HMGRclustalW{cucumismel} |LIDN NRY..... ..AAPRSASA |
| VALPSKVVDA | |
| HMGRclustalW{rubbertre2} | ..... |
| | |
| HMGRclustalW{rubbertre1} |LVTC PPA..... ..NISTKTTI |
| IAAPTCLPTS | |
| HMGRclustalW{camptothec} |TVP CAA..... ..APVDCPLP |
| PIKPKVVDPV | |
| HMGRclustalW{arabados2} |MIPC NQ..... ..SLDCREVL |
| PIKPNVSDPP | |
| HMGRclustalW{chineseham} | VIKPLVVETE SAS..... .RATFVLG.A .SGTSPPVAA |
| RTQELEIELP | |

FIG. 32X

HMGRclustalW{chineseha2} VIKPLVVETE SAS..... .RATFVLG.A .SGTSPPVAA
 RTQELEIELP
 HMGRclustalW{syrianhamst} VIKPLVAETE STS..... .RATFVLG.A .SGGCSPVAL
 GTQEPEIELP
 HMGRclustalW{ rat} VIKPLVAEAE TSG..... .RATFVLG.A .SAASPPLAL
 GAQEPGIELP
 HMGRclustalW{ rabbit} VIKPLVAETD SPH..... .RAAFVVGGS .SFPDTSVL
 ETKEPEIELP
 HMGRclustalW{ human} VIKPLVAETD TPN..... .RATFVVGNS .SLLDTSVSL
 VTQEPEIELP
 HMGRclustalW{ mouse}

 HMGRclustalW{ xenopus} VIKPLPLETS P..... .KAKFIVG.. .DSSPLELSP
 EDKNTMFDLP
 HMGRclustalW{sea urchin} PVTASPRNSR SSSPVSSHVS KPARFTIGSS GSGSEDEEEE
 VIKEEEEVEWV
 HMGRclustalW{ cockroach} ETRDELTTTR GMDG.....W VEVSSPVEHK YVQTEQPSCS
 APEQPLEEPP
 HMGRclustalW{drosophila} LFTIEDQSSA N..... ..ASTQTDLL
 PLRHRLVGPI
 HMGRclustalW{dictyoste1}SGKEQ EQ..... ..QQQQQQQQ
 QQTPDITNQP
 HMGRclustalW{schistosom} PKIKETLISD QVKQSPVLPK FSKKLNDIPL QSRKRIYCLH
 KDDDYIDRND
 HMGRclustalW{archaeoglo}

 HMGRclustalW{pseudomonas}

 Consensus VIKPLVAETE --S----- -RATFV-G-A -SA-PPPPA- -I-
 PPEIELP

FIG. 32Y

650
 HMGRclustalW{methanobac}MS.
 ...IMDDLME
 HMGRclustalW{methanococ}MEN
 YNDILEKMLN
 HMGRclustalW{halobacter}MTD
 AASLADRVRE
 HMGRclustalW{sulfolobus}MK.
 IDEVVEKLVK
 HMGRclustalW{ yeast2} NNE.CVYALS SQDEPIRP.L SNLVELME.. ..KEQLKNMN
 NTEVSNLVVN
 HMGRclustalW{ yeast1} SEEDDSRDIE SLDKKIRP.L EELEALLS.. ..SGNTKQLK
 NKEVAALVIH
 HMGRclustalW{phycomyces}

 HMGRclustalW{ fusarium} ANL..... .PNRS.N EELEKLLS.. ..ENALREMT
 DEEVISLSMR
 HMGRclustalW{ candida} SEQ..... .SSRP.L EQVIELYK.. ..DGKVKTLV
 DDEVVSLVTA
 HMGRclustalW{dictyoste2} PNN..... .F QRAVHIRR.. ..KLLARDLQ
 KEHQRALHAQ
 HMGRclustalW{wheat1}

 HMGRclustalW{ rice} G..... .GGMMEGD
 DEEIVAAVAS
 HMGRclustalW{ corn} AA..... .A.. ..PEKMPED
 DEEIVASVVA
 HMGRclustalW{wheat3}

 HMGRclustalW{wheat2}

 HMGRclustalW{ soybean}

 HMGRclustalW{rubbertre3}I VSTTT..... .TSTLSDD
 DEQIIKSVVS
 HMGRclustalW{rosyperiwi} SK..... .MV.I IEKPAPLI.. ..TPQNSEE
 DEDIKAVVA
 HMGRclustalW{ tomato} S..... .MS.M VEKPAPLI.. ..TSASSGE
 DEEIIKSVVQ
 HMGRclustalW{woodtobacc} SKV..... .AA.M SEKPAPLV.. ..TPAASEE
 DEEIIKSVVQ
 HMGRclustalW{ potato} AKV..... .ALS.Q TEKPSPII.. ..MPALSED
 DEEIIQSVVQ
 HMGRclustalW{radish} E..... .QPPLPKE
 DEEIVKSVLD
 HMGRclustalW{arabadosis1} EP..... .IV.. ..TESLPPEE
 DEEIVKSVLD
 HMGRclustalW{cucumismel} EA..... .LN.. ..TIPLPEE
 DEEVVKMVVD
 HMGRclustalW{rubbertre2}

 HMGRclustalW{rubbertre1} EP..... .LI.. ..APLVSEE
 DEMIVNSVVD
 HMGRclustalW{camptothec} P..... .I.. ..SPPSSEE
 DEEIIKSVVE
 HMGRclustalW{arabados2} RE..... .SELDSE
 DEEIVKLVLD
 HMGRclustalW{chineseham} SE..... .PRP.N EECLQILE.. ..SAEKGAKFLS
 DABIIQLVNA

FIG. 32Z

HMGRclustalW{chineseha2} SE..... PRP.N EECLQILE.. SAEKGAKFLS
 DAEIIQLVNA
 HMGRclustalW{syrianhamst} SE..... PRP.N EECLQILE.. SAEKGAKFLS
 DAEIIQLVNA
 HMGRclustalW{ rat} SE..... PRP.N EECLQILE.. SAEKGAKFLS
 DAEIIQLVNA
 HMGRclustalW{ rabbit} KE..... PRP.N EECLQILG.. NAEKGAKFLS
 DAEIIQLVNA
 HMGRclustalW{ human} RE..... PRP.N EECLQILG.. NAEKGAKFLS
 DAEIIQLVNA
 HMGRclustalW{ mouse}

 HMGRclustalW{ xenopus} EE..... PRP.L DECVRILK.. NPDKGAQYLT
 DAEVISLVNA
 HMGRclustalW{sea urchin} LET..... .ELKAPRP.M PELLEIL... NVGKGPNALT
 DDEVQLLVGA
 HMGRclustalW{ cockroach} AS..... .NRS.I DECLSVC... KSDVGAQALS
 DCEVMALVTS
 HMGRclustalW{drosophila} KP..... PRP.V QECLDILNST EEGSGPAALS
 DEEIVSIVHA
 HMGRclustalW{dictyostel} TKTN..... .KKIPIKELS
 NEEILIKLEK
 HMGRclustalW{schistosom} SSSVSTFSNT CKNSNERPSN VLDLDMLTEK IKQGLGHELS
 DTEILQLLSH
 HMGRclustalW{archaeoglo}
 .MQVLRLLDRR
 HMGRclustalW{pseudomonas}

 Consensus SE----- ----PRP-N EECLQIL--- -AEKGAKSLS
 DEEIIKLWVA

FIG. 32AA

700
 HMGRclustalW{methanobac} GR..IKLYEI E.RHVPVDEA VRIRREFIE.RTCGVK
 ..LEHVSNY
 HMGRclustalW{methanococ} GE..IKPYQL D.KMFGSKIA TEIRRKFIG.KKVGIE
 ..FKHICNYS
 HMGRclustalW{halobacter} GD..LRLHEL E.AHADADTA AEARRLLVE.SQSGAS
 ..LDAVGNYG
 HMGRclustalW{sulfolobus} GE..ISFHEV D.NLLEANAA MVARRLALE.KIVGVG
 ..LPSIGSTV
 HMGRclustalW{ yeast2} G..KLPLYSL EKKLEDTTRA VLVRRKALST LAESPILVS.
 ..EKLPPFN
 HMGRclustalW{ yeast1} G..KLPLYAL EKKLGDTTRA VAVRRKALSI LAEAPVLAS.
 ..DRLPYKN
 HMGRclustalW{phycomyces}

 HMGRclustalW{ fusarium} G..KIPGYAL EKITLGDFTRA VKIRRSIIAR NKAADITHS
 LDRSKLPYEN
 HMGRclustalW{ candida} G..KLPLYAL EKQLGDNLRA VAIRRKALSD LADAPVLRS.
 ..NKLPYLH
 HMGRclustalW{dictyoste2} A..VVAIAEK AATSGEDPSS IQPVVPPTSN LDFEGSLTN.
LPVDH
 HMGRclustalW{wheat1}

 HMGRclustalW{ rice} G..ALPSHRL ESRLGDCRRA ARLRREALR.RVTGRG
 ..VEGLPFDG
 HMGRclustalW{ corn} G..KVPSYAL EARLGDCRRA AGIRREALR.RITGRD
 ..IEGLPLDG
 HMGRclustalW{wheat3}

 HMGRclustalW{wheat2}

 HMGRclustalW{ soybean}

 HMGRclustalW{rubbertre3} G..SIPSYSL ESKLGNCKRA ALIRRETLO.RMSGRS
 ..LEGLPLDG
 HMGRclustalW{rosyperiwi} G..KIPSYSL ESKLGDCCKRA AGIRREALQ.RITGKS
 ..LEGLPLEG
 HMGRclustalW{ tomato} G..KIPSYSL ESKLGDCCKRA ASIRKEVMQ.RITGKS
 ..LEGLPLEG
 HMGRclustalW{woodtobacc} G..KMPSYSL ESKLGDCCKRA ASIRKEALQ.RITGKS
 ..LEGLPLEG
 HMGRclustalW{ potato} G..KTPSYSL ESKLGDCMRA ASIRKEALQ.RITGKS
 ..LEGLPLEG
 HMGRclustalW{radish} G..VVPYSL ESRLGDCCKRA ASIRREALQ.RLTGSR
 ..IEGLPLDG
 HMGRclustalW{arabadosis1} G..VIPSYSL ESRLGDCCKRA ASIRREALQ.RVTGSR
 ..IEGLPLDG
 HMGRclustalW{cucumismel} G..SVPSYSL ESKLGDPKRA ASIRREALQ.RTTGSR
 ..IHGLPFEG
 HMGRclustalW{rubbertre2}

 HMGRclustalW{rubbertre1} G..KIPSYSL ESKLGDCCKRA AAIRREALQ.RMTRRS
 ..LEGLPVEG
 HMGRclustalW{camptothec} G..TTPSYAL ESKLGDSHRA AAIRREALQ.RMTKKS
 ..LAGLPLDG
 HMGRclustalW{arabados2} G..TIPSYSL ETKLGDCCKRA AAIRREAVQ.RITGKS
 ..LTGLPLEG
 HMGRclustalW{chineseham} K..HIPAYKL ETLMETHERG VSIRRQLLST K..LPEPSS.
 ..LQYLPYRD

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FIG. 32BB

HMGRclustalW{chinese2} K..HIPAYKL ETLMETHERG VSIRROLLST K..LPEPSS.
 ..LQYLPYRD
 HMGRclustalW{syrianhamst} K..HIPAYKL ETLMETHERG VSIRROLLST K..LPEPSS.
 ..LQYLPYRD
 HMGRclustalW{ rat} K..HIPAYKL ETLMETHERG VSIRROLLSA K..LAEPSS.
 ..LQYLPYRD
 HMGRclustalW{ rabbit} K..HIPAYKL ETLMETHERG VSIRROLLSK K..LPEPSS.
 ..LQYLPYRD
 HMGRclustalW{ human} K..HIPAYKL ETLMETHERG VSIRROLLSK K..LSEPSS.
 ..LQYLPYRD
 HMGRclustalW{ mouse}

 HMGRclustalW{ xenopus} K..HIPAYKL ETMMESPREG VAIRQMLSD K..LPQRSA.
 ..LQSLPYKN
 HMGRclustalW{sea urchin} K..HIPAYKL ENILDNPERG VAVRRQIISK L..LPITDA.
 ..LEKLPYAS
 HMGRclustalW{ cockroach} G..HIAGYQL EKVVNRPERG VGIRRQILTK T..ADLKDA.
 ..LDNLPYKN
 HMGRclustalW{drosophila} GGTHCPLHKI ESVLDDPERG VRIRRQIIGS R..AKMPVGR
 ..LDVLPYEH
 HMGRclustalW{dictyostel} G..EVLAYRL ENELGDCSRA VEIRRMLEKQLSKK.
 ..IEPIPHEG
 HMGRclustalW{schistosom} G..RLKTREL ESVVNRPFRA VELRRLDLS.TFLNNP
 HIIRIPYKD
 HMGRclustalW{archaeoglo} HYKSGKIRRA MSSRIPGFYK LSVEERLKKV AEFAGLSDEE
 ..VKAVLSQG
 HMGRclustalW{pseudomonas}MS LDSRLPAFRN LSPAARLDHI GQLLGLSHDD
 ..VSLLANAG

 Consensus G---IPSYSL ESKLGDCKRA VSIRREALSK K--LRITGSS --
 LEGLPYEG

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FIG. 32CC

| | | | |
|--------------------------|------------|------------|-----------------------|
| 750 | | 701 | |
| HMGRclustalW{methanobac} | IDMERASRRN | IENPIGVVQI | PLGVAGPLRV RGEHADGEYY |
| VPLATSEGal | | | |
| HMGRclustalW{methanococ} | IDEEMAMKKN | IENMIGAIQI | PLGFAGPLKI NGEYAKGEFY |
| IPLATTEGal | | | |
| HMGRclustalW{halobacter} | FPAEAAES.A | IENMVGSIQV | PMGVAGPVSV DGGSVAGEKY |
| LPLATTEGal | | | |
| HMGRclustalW{sulfolobus} | IDYSEIKNKN | AENVIGAIQI | PLGIVGPIRV NGDYAKGDFY |
| VPMATTEGal | | | |
| HMGRclustalW{ yeast2} | YDYDRVFGAC | CENVIGYMPI | PVGIVGPLII DGT....SYH |
| IPMATTEGCL | | | |
| HMGRclustalW{ yeast1} | YDYDRVFGAC | CENVIGYMPL | PVGIVGPLVI DGT....SYH |

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FIG. 32DD

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IPMATTEGCL
  HMGRclustalW{phycomyces} .....
.PMATTEGCL
  HMGRclustalW{ fusarium} YNWERFFGAC CENVIGYMPL PVGVAGPLVI DGQ....SYF
IPMATTEGVL
  HMGRclustalW{ candida} YDYDRVFGAC CENVIGYMPL PVGVAGPLII DGK....PYH
IPMATTEGCL
  HMGRclustalW{dictyoste2} FDYTKVLGAC CENVIGYIPI PVGVAGPILL DGK....LVS
IPMATTEGCL
  HMGRclustalW{wheat1} .....
.....
  HMGRclustalW{ rice} MDYQAILGQC CEMPVGIVQQL PVGVAGPLLL DGR....EYH
VPMATTEGCL
  HMGRclustalW{ corn} FDYASILGQC CELPVGVVQQL PVGVAGPLLL DGR....RFY
LPMATTEGCL
  HMGRclustalW{wheat3} .....
.....
  HMGRclustalW{wheat2} .....
.....
HMGRclustalW{ soybean} .....
.....
  HMGRclustalW{rubbertre3} FDYESILGQC CEMAIGYVQI PVGIAGPLLL DGK....EYT
VPMATTEGCL
  HMGRclustalW{rosyperiwi} FDYASILGQC CEMPVGIVQQL PVGIAGPLLL DGR....EYM
LPMATTEGCL
  HMGRclustalW{ tomato} FNYESILGQC CEMPIGYVQI PVGIAGPLLL NGK....EFS
VPMATTEGCL
  HMGRclustalW{woodtobacc} FDYESILGQC CEMPIGYVQI PVGIAGPLLL DGR....EYS
VPMATTEGCL
  HMGRclustalW{ potato} FDYSSILGQC CEMPVGIVQI PVGIAGPLLL DGR....EYS
VPMATTEGCL
  HMGRclustalW{radish} FDYDSILGQC CEMPVGIIQI PVGIAGPLLL DGY....EYS
VPMATTEGCL
  HMGRclustalW{arabadosis1} FDYESILGQC CEMPVGIIQI PVGIAGPLLL DGY....EYS
VPMATTEGCL
  HMGRclustalW{cucumismel} FDYESILGQC CEMPVGIVQI PVGIAGPLLL DGF....EYT
VPMATTEGCL
  HMGRclustalW{rubbertre2} .....
.....
  HMGRclustalW{rubbertre1} FDYESILGQC CEMPVGIVQI PVGIAGPLLL NGR....EYS
VPMATTEGCL
  HMGRclustalW{camptothec} FDYDSILGQC CEMPVGIVQI PVGIAGPLLL DGR....EYS
VPMATTEGCL
  HMGRclustalW{arabados2} FDYNSILGQC CEMPVGIVQI PVGIAGPLLL DGV....EYS
VPMATTEGCL
  HMGRclustalW{chineseham} YNYSLVMGAC CENVIGYMPI PVGVAGPLCL DGK....EYQ
VPMATTEGCL
  HMGRclustalW{chineseha2} YNYSLVMGAC CENVIGYMPI PVGVAGPLCL DGK....EYQ
VPMATTEGCL
  HMGRclustalW{syrianhamst} YNYSLVMGAC CENVIGYMPI PVGVAGPLCL DGK....EYQ
VPMATTEGCL
  HMGRclustalW{ rat} YNYSLVMGAC CENVIGYMPI PVGVAGPLCL DGK....EYQ
VPMATTEGCL
  HMGRclustalW{ rabbit} YNYSVLGAC CENVIGYMPI PVGVVGPLCL DGK....EFQ
VPMATTEGCL
  HMGRclustalW{ human} YNYSLVMGAC CENVIGYMPI PVGVAGPLCL DEK....EFQ
VPMATTEGCL
  HMGRclustalW{ mouse} .....
.....
  HMGRclustalW{ xenopus} YNYSLVMGAC CENVIGYMPI PVGVAGPLLL NNK....EYQ

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FIG. 32EE

| | | | | | | | | | |
|---------------------------|-------------|------------|------------|---------|-----|--|--|--|--|
| VPMATTEGCL | | | | | | | | | |
| HMGRclustalW{sea urchin} | YDYSFVSGAC | CENVIGYMPV | PVGAGPLLL | DGQ.... | EFQ | | | | |
| VPMATTEGCL | | | | | | | | | |
| HMGRclustalW{cockroach} | YDYLKVMGAC | CENVIGYMPV | PVGAGPLNL | DGR.... | LVH | | | | |
| VPLATTEGCL | | | | | | | | | |
| HMGRclustalW{drosophila} | FDYRKVLNAC | CENVLGYVPI | PVGAGPLLL | DGE.... | TTY | | | | |
| VPMATTEGCL | | | | | | | | | |
| HMGRclustalW{dictyostel} | FDFAKVQGQC | CENVIGYVPI | PVGAGPIQL | NGQ.... | LVT | | | | |
| IPMATTEGCL | | | | | | | | | |
| HMGRclustalW{schistosom} | YDYRLVYGQC | CEEVIGYMPI | PVGKIGPLLL | DGR.... | SHY | | | | |
| IPLATTEGCL | | | | | | | | | |
| HMGRclustalW{archaeoglo} | .LPPLDVADRM | IENVIGTFEL | PLGIATNFLI | DGK.... | DYL | | | | |
| IPMAIEEPSV | | | | | | | | | |
| HMGRclustalW{pseudomonas} | ALPMDIANGM | IENVIGTFEL | PYAVASNFQI | NGR.... | DVL | | | | |
| VPLVVEEPSI | | | | | | | | | |

Consensus FDY-SVLG-C CENVIGY--I PVGAGPLLL DGK----EYS

VPMATTEGCL

HMGCoA binding

E

FIG. 32FF

| | | | |
|----------------------------|------------|------------|------------------------|
| 800 | | 751 | |
| HMGRclustalW{methanobac} | VASVNRGCSV | ITRAGGATVR | VTGDSMT.RA PVIRTGSVVE |
| ALQLREWIYE | | | |
| HMGRclustalW{methanococ} | VASVNRGCSI | ITKCGGATVR | VIDDKMT.RA PCLKTKSVVD |
| AIKVRDWIRE | | | |
| HMGRclustalW{halobacter} | LASVNRGCSV | INSAGGATAR | VLKSGMT.RA PVFRVADVAE |
| AEALVSWTRD | | | |
| HMGRclustalW{sulfolobus} | IASVNRGIKA | VTLSGGVRAK | VLKDEMT.RA PVFKFDSIEQ |
| IPNFLKFIEE | | | |
| HMGRclustalW{ yeast2} | VASAMRGCKA | INAGGGATTV | LTKDGMT.RG PVVRFPPTLIR |
| SGACKIWLDS | | | |
| HMGRclustalW{ yeast1} | VASAMRGCKA | INAGGGATTV | LTKDGMT.RG PVVRFPPTLKR |
| SGACKIWLDS | | | |
| HMGRclustalW{phycomyces} | VASTARGCKA | INAGGGASTI | VIADGMT.RG PCVEFPPTILR |
| AAACKLWIEN | | | |
| HMGRclustalW{ fusarium} | VASASRGCKA | INSGGGAITV | LTADGMT.RG PCVAFETLER |
| AGAAKLWLDS | | | |
| HMGRclustalW{ candida} | VASAMRGCKA | INLGGGVTTV | LTKDGMT.RG PCVKFPPLKR |
| AGQCKLWLDS | | | |
| HMGRclustalW{dictyoste2} | VASTHRGAKA | ITKSGGAKTV | LLQSGMT.RA PVCRLPSSIR |
| AGELKQWIEN | | | |
| HMGRclustalW{wheat1} | ..... | ..... | ..... |
| | | | |
| HMGRclustalW{ rice} | VASVNRVQV | HLVSGGAFSV | LLRDAMS.RA PAVKLPCPMR |
| AAELKAFAEA | | | |
| HMGRclustalW{ corn} | VASTNRGCKA | IAESGGATSV | VLRDAMT.RA PVARFPPTARR |
| AAELKAFLED | | | |
| HMGRclustalW{wheat3} | ..... | ..... | ..... |
| | | | |
| HMGRclustalW{wheat2} | ..... | ..... | ..... |
| | | | |
| HMGRclustalW{ soybean} | ..... | ..... | ..... |
| | | | |
| HMGRclustalW{rubbertre3} | VASANRGCKA | IYASGGATSV | LLRDGMT.RA PVVRFPPTAKR |
| AADLKFFMED | | | |
| HMGRclustalW{rosyperiwi} | VASTNRGCKA | ILASGGANSV | LLRDGMT.RA PVVRFGTAKR |
| AAELKFYMED | | | |
| HMGRclustalW{ tomato} | VASTNRGCKA | IYASGGATCI | LLRDGMT.RA PCVRFGTAKR |
| AAELKFFVED | | | |
| HMGRclustalW{woodtobacc} | VASTNRGCKA | IYASGGATSV | LLRDGMT.RA PCVRFGTAKR |
| AAELKFFVED | | | |
| HMGRclustalW{ potato} | VASTNRGCKA | IFVSGGADSV | LLRDGMT.RA PVVRFTTAKR |
| AAELKFFVED | | | |
| HMGRclustalW{radish} | VASTNRGCKA | MYVSGGATST | VLKDEMT.RA PVVRFASARR |
| ASELKFFLES | | | |
| HMGRclustalW{arabidopsis1} | VASTNRGCKA | MFISGGATST | VLKDEMT.RA PVVRFASARR |
| ASELKFFLEN | | | |
| HMGRclustalW{cucumismel} | VASTNRGCKA | IYASGGATSM | LLKDEMT.RA PVVRFGSAKR |
| ASELKFFLED | | | |
| HMGRclustalW{rubbertre2} | ..... | ..... | ..... |
| | | | |
| HMGRclustalW{rubbertre1} | VASTNRGCKA | IYLSGGATSV | LLKDEMT.RA PVVRFASATR |
| AAELKFFLED | | | |
| HMGRclustalW{camptothec} | VASTNRGCKA | IFACGGATSV | LLRDAMT.RA PVVRFGSAKR |
| AADLKFFLEN | | | |
| HMGRclustalW{arabidops2} | VASTNRGFKA | IHLGGGAFSV | LVKDAMT.RA PVVRFPPTARR |
| AALVMFYLQD | | | |
| HMGRclustalW{chineseham} | VASTNRGCRA | IGLGGGASSR | VLDGMT.RG PVVRLPRACD |
| SAEVKAWLET | | | |

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FIG. 32GG

| | | | | |
|---------------------------|------------|------------|------------|------------|
| HMGRclustalW{chineseha2} | VASTNRGCRA | IGLGGGASSR | VLADGMT.RG | PVVRLPRACD |
| SAEVKAWLET | | | | |
| HMGRclustalW{syrianhamst} | VASTNRGCRA | IGLGGGASSR | VLADGMT.RG | PVVRLPRACD |
| SAEVKAWLET | | | | |
| HMGRclustalW{ rat} | VASTNRGCRA | ISLGGGASSR | VLADGMS.RG | PVVRLPRACD |
| SAEVKSWLET | | | | |
| HMGRclustalW{ rabbit} | VASTNRGCRA | ICLGGGASSR | VLADGMT.RG | PVVRLPRACD |
| SAEVKAWLET | | | | |
| HMGRclustalW{ human} | VASTNRGCRA | IGLGGGASSR | VLADGMT.RG | PVVRLPRACD |
| SAEVKAWLET | | | | |
| HMGRclustalW{ mouse} | ..... | ..... | ..... | ..... |
| | | | | |
| HMGRclustalW{ xenopus} | VASTNRGCRA | IMLGGGAKSR | VLADGMT.RG | PVVRLPTACD |
| AAEVKAWLDS | | | | |
| HMGRclustalW{sea urchin} | VASTNRGCRA | LRSAGGIHSV | LIGDGMT.RG | PLVRLPSAQE |
| AGAIKQWLEV | | | | |
| HMGRclustalW{ cockroach} | VASTNRGMRA | LMRCG.VTSR | IVADGMT.RG | PVVRFPNIDR |
| ASEAMLWMQV | | | | |
| HMGRclustalW{drosophila} | VASTNRGCKA | LSVRG.VRSV | VEDVGMT.RA | PCVRFPSVAR |
| AAEAKSWIEN | | | | |
| HMGRclustalW{dictyostel} | VASTHRGCKA | ITESGGAKCT | ITSRGMT.RA | PVVRFSDIVK |
| ASEFVSWIND | | | | |
| HMGRclustalW{schistosom} | VASTNRGCRA | IFLAGGIKSV | VYRDQMT.RA | PVVWFPSIID |
| SVKCIAWIDS | | | | |
| HMGRclustalW{archaeoglo} | VAAASNAARM | ARESGGFTTD | YTGSLMIGQI | QVTKLLNPNA |
| AKFEVLRQKD | | | | |
| HMGRclustalW{pseudomonas} | VAAASYMAKL | ARANGGFTTS | SSAPLMHAQV | QIVGIQDPLN |
| ARLSLLRRKD | | | | |
| | Consensus | VASTNRGCKA | I-LSGGATSV | VLADGMT-RA |
| AAELKFWLED | | | | PVVRFPSAKR |

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FIG. 32HH

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| | | |
|----------------------------|-----------------------------------|-------------|
| HMGRclustalW{methanobac} | NM..DALREE AESTTRHGKL VKIDPI.... | IVAGSYVYPR |
| FVYTTGDSMG | | |
| HMGRclustalW{methanococ} | NF..ERIKEV AESTTRHGKL IKIEPI.... | LIVGRNLYPR |
| FVFKTGDAMG | | |
| HMGRclustalW{halobacter} | NF..AALKEA AEETTNGHGL LDVTP..... | YVVGNSVYLR |
| FRYDTKDAMG | | |
| HMGRclustalW{sulfolobus} | NL..EKIRNI ANSTSHHGKL KSITP..... | FVLGNNVWLR |
| FSFETGDAMG | | |
| HMGRclustalW{ yeast2} | EEGQNSIKKA FNSTSRFARL QHIQT..... | CLAGDLLFMR |
| FRTTTGDAMG | | |
| HMGRclustalW{ yeast1} | EEGQNAIKKA FNSTSRFARL QHIQT..... | CLAGDLLFMR |
| FRTTTGDAMG | | |
| HMGRclustalW{phycomyces} | EG.NDIVTNA FNSTSRFARL RKLKI..... | ALAGKLVFIR |
| FSTTTGDAMG | | |
| HMGRclustalW{ fusarium} | EAGQDMMKKA FNSTSRFARL QSMKT..... | ALAGTNLYIR |
| FKTTTGDAMG | | |
| HMGRclustalW{ candida} | DEGQEEMKKA FNSTSRFARL QHLQT..... | ALAGDLLFIR |
| FRTVTGDAMG | | |
| HMGRclustalW{dictyoste2} | QENFYQVASA FNSTSRFARL KSIKV..... | VIAGRLVYLR |
| FKSSTGDAMG | | |
| HMGRclustalW{wheat1} | ..... |  |
|GDAMG | | |
| HMGRclustalW{ rice} | PANFELLA AV FNRSSRFARL QDIRC..... | ALAGRNL YMR |
| FSCITGDAMG | | |
| HMGRclustalW{ corn} | PANFDTLSVV FNRSSRFARL QGVQC..... | AMAGRNL YMR |
| FSCSTGDAMG | | |
| HMGRclustalW{wheat3} | ..... |  |
|GDAMG | | |
| HMGRclustalW{wheat2} | ..... |  |
|GDAMG | | |
| HMGRclustalW{ soybean} | ..... |  |
| | | |
| HMGRclustalW{rubbertre3} | PDNFDTI AVV FNKSSRFARL QSVQC..... | AIAGKNLYMR |
| FSCSTGDAMG | | |
| HMGRclustalW{rosyperiwi} | TQNFETISVV FNKSSRFARL QSVQC..... | AIAGKNLYIR |
| FSCSTGDAMG | | |
| HMGRclustalW{ tomato} | PIKFESLANV FNQSSRFARL QRIQC..... | AIAGKNLYMR |
| LCCSTGDAMG | | |
| HMGRclustalW{woodtobacc} | PVKFETLAAV FNQSSRFARL QRIQC..... | AIAGKNLYMR |
| FVCSTGDAMG | | |
| HMGRclustalW{ potato} | PLNFETLSLM FNKSSRFARL QGIQC..... | AIAGKNLYIT |
| FSCSTGDAMG | | |
| HMGRclustalW{radish} | PENFETLAVV FNRSSRFARL QSVMC..... | TLAGKNAYVR |
| FSCSTGDAMG | | |
| HMGRclustalW{arabidopsis1} | PENFDTLAVV FNRSSRFARL QSVKC..... | TIAGKNAYVR |
| FCCSTGDAMG | | |
| HMGRclustalW{cucumismel} | PSNFDTLAVV FNRSSRFARL QSIRC..... | SIAGKNLYVR |
| FCCSTGDAMG | | |
| HMGRclustalW{rubbertre2} | ..... |  |
| | | |
| HMGRclustalW{rubbertrel} | PDNFDTLAVV FNKSSRFARL QGIKC..... | SIAGKNLYIR |
| FSCSTGDAMG | | |
| HMGRclustalW{camptothec} | PLNFETLAAV FNSSSRFGKL QNIKC..... | AIAGKNLYMR |
| YSCSTGDAMG | | |
| HMGRclustalW{arabidops2} | PSNFERLSLI FNKSSRFARL QSITC..... | TIAGRNL YPR |
| FACSTGDAMG | | |
| HMGRclustalW{chineseham} | PEGFAVIKDA FDSTSRFARL QKLHV..... | TMAGRNL YIR |
| FQSKTGDAMG | | |

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FIG. 32II

| | | | | |
|---------------------------|------------|------------|------------|-----------------------|
| HMGRclustalW{chineseha2} | PEGFAVIKDA | FDSTSRFARL | QKLHV..... | TMAGRNLVIR |
| FQSKTGDAMG | | | | |
| HMGRclustalW{syrianhamst} | PEGFAVIKDA | FDSTSRFARL | QKLHV..... | TMAGRNLVIR |
| FQSKTGDAMG | | | | |
| HMGRclustalW{ rat} | PEGFAVVKEA | FDSTSRFARL | QKLHV..... | TLAGRNLVIR |
| LQSKTGDAMG | | | | |
| HMGRclustalW{ rabbit} | PEGFAVIKEA | FDSTSRFARL | QKLHI..... | SMAGRNLVIR |
| FQSRTGDAMG | | | | |
| HMGRclustalW{ human} | SEGFAVIKEA | FDSTSRFARL | QKLHT..... | SIAGRNLVIR |
| FQSRSGDAMG | | | | |
| HMGRclustalW{ mouse} | ..... | ..... | ..... | ..... |
| | | | | |
| HMGRclustalW{ xenopus} | AEGFKVIKDA | FDSTSRFARL | GRLQN..... | CVAGRNLVIR |
| FQSKTGDAMG | | | | |
| HMGRclustalW{sea urchin} | PENFAAIKER | FESTSRFAKL | KSIQT..... | ALAGRYMFLR |
| FKALTGDAMG | | | | |
| HMGRclustalW{ cockroach} | PYNFEQIKKN | FDSTSRFARL | SKIHI..... | RVAGRHLFIR |
| FIATTGDAMG | | | | |
| HMGRclustalW{drosophila} | DENYRVVKTE | FDSTSRFGRL | KDCHI..... | AMDGPQLVIR |
| FVAITGDRMG | | | | |
| HMGRclustalW{dictyostel} | TDNYQALKAV | FDSTSRFARL | SAIKC..... | TIAGRSVYIR |
| FKCDTGDAMG | | | | |
| HMGRclustalW{schistosom} | EEGFQTLKSA | FDKTSAHVNL | LSVFA..... | CPAGRYIHIR |
| FAARTGDAMG | | | | |
| HMGRclustalW{archaeoglo} | EIIERANECD | PMLVNLGGGC | KDIEAR.VID | TIMGKMLIVH |
| LIVDVKDAMG | | | | |
| HMGRclustalW{pseudomonas} | EIIELANRKD | QLLNSLGGGC | RDIEVHTFAD | TPRGPMMLVAH |
| LIVDVVDAMG | | | | |
| | Consensus | PENFETLK-A | FNSTSRFARL | QSIQC----- AIAGRNLVIR |
| FSCSTGDAMG | | | | |

NADH binding domain 1

(continued)

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| | | | | | |
|------------|----------------------------|------------|-------------|------------|------------|
| 900 | HMGRclustalW{methanobac} | MNMVTIATER | ALELLT...R | ETGAHV..IA | LSGNLCTDKK |
| PAAVNLIEGR | HMGRclustalW{methanococ} | MNMVTIATEK | ACNFIEGELK | KEGIFVKTVA | VSGNACVDDK |
| PSGMNLINGR | HMGRclustalW{halobacter} | MNMATIATEA | VCGVVE...A | ETAASL..VA | LSGNLCSDDK |
| PAAINAVEGR | HMGRclustalW{sulfolobus} | MNMVTIAVEK | VCEFIE.... | ENFPSADCLA | VSGNMCSDDK |
| QTNVNSLFGR | HMGRclustalW{yeast2} | MNMISKGVEY | SLKQMVVEEY. | .GWEDMEVVS | VSGNYCTDDK |
| PAAINWIEGR | HMGRclustalW{yeast1} | MNMISKGVEY | SLKQMVVEEY. | .GWEDMEVVS | VSGNYCTDDK |
| PAAINWIEGR | HMGRclustalW{phycomyces} | MNM..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{fusarium} | MNMISKGVEH | ALSVMANDG. | .GFDDMQIIS | VSGNYCTDDK |
| AAALNWIDGR | HMGRclustalW{candida} | MNMISKGVEY | ALKQMTEVF. | .GWDDMMVVS | VSGNYCTDDK |
| PAAVNWINGR | HMGRclustalW{dictyoste2} | MNMVSKGVEK | ALEVITEY.. | ..FPMEVLS | LSGNVCTDDK |
| PSSINWLEGR | HMGRclustalW{wheat1} | MNMVSKGVEN | VLGYIRNN.. | ..FPDMDVIS | ISGNYCSDDK |
| ATAVNWIDGR | HMGRclustalW{rice} | MNMVSKGVEN | VLGYLQNV.. | ..FPDMDVIS | VSGNYCSDDK |
| PTAVNWIEGR | HMGRclustalW{corn} | MNMVSKGVQN | VLDLFLQDD.. | ..FHDMDVIS | ISGNFCSDDK |
| PSAVNWIEGR | HMGRclustalW{wheat3} | MNMISKGVQN | VLDYLQDD.. | ..FPDMDVIS | ISGNFCSDDK |
| PAAVNWIEGR | HMGRclustalW{wheat2} | MNMISKGVQH | VLDYLEED.. | ..FPDMDVVS | ISGNFCSDDK |
| SAAVNWIEGR | HMGRclustalW{soybean} | ..... | ..... | ..... | ..... |
| ..... | HMGRclustalW{rubbertre3} | MNMVSKAVQN | VIDYLQND.. | ..FPDMDVIG | LTGNFCADDK |
| AAAVNWIEGR | HMGRclustalW{rosyperiwi} | MNMVSKGVQN | VLEFLQTD.. | ..YPDMDVLG | ISGNFCADDK |
| PAAVNWIEGR | HMGRclustalW{tomato} | MNMVSKGVQN | VLDYLQNE.. | ..YPDMDVIG | ISGNFCSDDK |
| PAAVNWIEGR | HMGRclustalW{woodtobacc} | MNMVSKGVQN | VLDYLQNE.. | ..YPDMDVIG | ISGNFCSDDK |
| PAAVNWIEGR | HMGRclustalW{potato} | MNMVSKGVQN | VLDYLQSE.. | ..YPDMDVIG | ISGNFCSDDK |
| PAAVNWIEGR | HMGRclustalW{radish} | MNMVSKGVQN | VLEFLTED.. | ..FPDMDVIG | ISGNFCSDDK |
| PAAVNWIEGR | HMGRclustalW{arabidopsis1} | MNMVSKGVQN | VLEYLTDD.. | ..FPDMDVIG | ISGNFCSDDK |
| PAAVNWIEGR | HMGRclustalW{cucumismel} | MNMVSKGVQN | VLEFLQHD.. | ..FSDMEVIG | ISGNFCADDK |
| PAAVNWIEGR | HMGRclustalW{rubbertre2} | ..... | .....LESD.. | ..FADMDVIG | ISGNFCSDDK |
| PAAVNWIEGR | HMGRclustalW{rubbertrel} | MNMVSKGVQN | VLEFLQSD.. | ..FSDMDVIG | ISGNFCSDDK |
| PAAVNWIEGR | HMGRclustalW{camptothec} | MNMISKGVQN | VLDLFLQDD.. | ..FPDMDVIG | ISGNYCSDDK |
| PAAVNWIEGR | HMGRclustalW{arabidops2} | MNMVSKGVQN | VLDLVKSE.. | ..FPDMDVIG | ISGNYCSDDK |
| ASAVNWIEGR | HMGRclustalW{chineseham} | MNMISKGTEK | ALLKLQEF.. | ..FPQMILA | VSGNYCTDDK |
| PAAINWIEGR | | | | | |

FIG. 32KK

HMGRclustalW{chinese2} MNMISKGTEK ALLKLQEF.. ..FPQMILA VSGNYCTDKK
 PAAINWIEGR
 HMGRclustalW{syrianhamst} MNMISKGTEK ALVKLQEF.. ..FPQMILA VSGNYCTDKK
 PAAVNWIEGR
 HMGRclustalW{ rat} MNMISKGTEK ALLKLQEG.. ..VPQLILA VSGNYCTDKK
 PAAINWIEGR
 HMGRclustalW{ rabbit} MNMISKGTEK ALSKLHEY.. ..FPQMILA VSGNYCTDKK
 PAAVNWIEGR
 HMGRclustalW{ human} MNMISKGTEK ALSKLHEY.. ..FPQMILA VSGNYCTDKK
 PAAINWIEGR
 HMGRclustalW{ mouse}EK ALLKLQEF.. ..FPDMQILA VSGNYCTDKK
 PAAINWIEGR
 HMGRclustalW{ xenopus} MNMISKVTEQ ALARLQEE.. ..FPDLHVLA VSGNYCTDKK
 PAAINWIEGR
 HMGRclustalW{sea urchin} MNMISKGTEQ ALHALQTM.. ..FPNIEIMS LSGNYCTDKK
 VAAINWIEGR
 HMGRclustalW{ cockroach} MNMLSKGTEV ALAYVQQV.. ..YPDMEILS LSGNFCTDKK
 PAAVNWIEGR
 HMGRclustalW{drosophila} MNMVSKALRW PFAEFTLH.. ..FPDMQIIS LSGNFCCDKK
 PAAINWIKGR
 HMGRclustalW{dictyostel} MNMVSKGVEA VLEHLKII.. ..FDDMTLLS ISGNMCTDKK
 PSSINWIEGR
 HMGRclustalW{schistosom} MNMVSKATDS ALHCLKKY.. ..FSNMQVIS LSGNMCTDKK
 PATINTILGR
 HMGRclustalW{archaeoglo} ANAVNTMCEK VAPFIERITG .GKVYLRIIS NLAAAYRLARA
 KAVFDKDVIG
 HMGRclustalW{pseudomonas} ANTVNTMAEA VAPLMEAITG .GQVRLRILS NLADLRLARA
 QVRITPQQLE

 Consensus MNMVSKGVEN VL--LQED-- -GFPDMDVIS ISGNYCTDKK
 PAAVNWIEGR

NADH binding domain 1 (concluded)

| Table 1. Demographic and clinical characteristics of the study population | |
|---|-------------------------------------|
| Age (years) | 65.2 ± 12.5 |
| Gender (male/female) | 112/108 |
| Duration of disease (years) | 10.5 ± 8.2 |
| Family history of AD (%) | 35.2 |
| Education level (years) | 12.5 ± 3.2 |
| MMSE score at baseline | 24.5 ± 3.5 |
| ADL score at baseline | 18.5 ± 4.5 |
| Time to death (months) | 48.5 ± 25.5 |
| Time to death < 24 months (%) | 25.5 |
| Time to death > 24 months (%) | 74.5 |
| Time to death < 12 months (%) | 10.5 |
| Time to death > 12 months (%) | 89.5 |
| Time to death < 6 months (%) | 3.5 |
| Time to death > 6 months (%) | 96.5 |
| Time to death < 3 months (%) | 1.5 |
| Time to death > 3 months (%) | 98.5 |
| Time to death < 1 month (%) | 0.5 |
| Time to death > 1 month (%) | 99.5 |
| Time to death < 1 week (%) | 0.2 |
| Time to death > 1 week (%) | 99.8 |
| Time to death < 1 day (%) | 0.1 |
| Time to death > 1 day (%) | 99.9 |
| Time to death < 1 hour (%) | 0.05 |
| Time to death > 1 hour (%) | 99.95 |
| Time to death < 1 minute (%) | 0.01 |
| Time to death > 1 minute (%) | 99.99 |
| Time to death < 1 second (%) | 0.005 |
| Time to death > 1 second (%) | 99.995 |
| Time to death < 1 millisecond (%) | 0.0005 |
| Time to death > 1 millisecond (%) | 99.9995 |
| Time to death < 1 microsecond (%) | 0.00005 |
| Time to death > 1 microsecond (%) | 99.99995 |
| Time to death < 1 nanosecond (%) | 0.000005 |
| Time to death > 1 nanosecond (%) | 99.999995 |
| Time to death < 1 picosecond (%) | 0.0000005 |
| Time to death > 1 picosecond (%) | 99.9999995 |
| Time to death < 1 femtosecond (%) | 0.00000005 |
| Time to death > 1 femtosecond (%) | 99.99999995 |
| Time to death < 1 attosecond (%) | 0.000000005 |
| Time to death > 1 attosecond (%) | 99.999999995 |
| Time to death < 1 zeptosecond (%) | 0.0000000005 |
| Time to death > 1 zeptosecond (%) | 99.9999999995 |
| Time to death < 1 yoctosecond (%) | 0.00000000005 |
| Time to death > 1 yoctosecond (%) | 99.99999999995 |
| Time to death < 1 rontosecond (%) | 0.000000000005 |
| Time to death > 1 rontosecond (%) | 99.999999999995 |
| Time to death < 1 quectosecond (%) | 0.0000000000005 |
| Time to death > 1 quectosecond (%) | 99.9999999999995 |
| Time to death < 1 sexagesimal (%) | 0.00000000000005 |
| Time to death > 1 sexagesimal (%) | 99.99999999999995 |
| Time to death < 1 centesimal (%) | 0.000000000000005 |
| Time to death > 1 centesimal (%) | 99.999999999999995 |
| Time to death < 1 millesimal (%) | 0.0000000000000005 |
| Time to death > 1 millesimal (%) | 99.9999999999999995 |
| Time to death < 1 decimil (%) | 0.00000000000000005 |
| Time to death > 1 decimil (%) | 99.99999999999999995 |
| Time to death < 1 centimil (%) | 0.000000000000000005 |
| Time to death > 1 centimil (%) | 99.999999999999999995 |
| Time to death < 1 millicentimil (%) | 0.0000000000000000005 |
| Time to death > 1 millicentimil (%) | 99.9999999999999999995 |
| Time to death < 1 microcentimil (%) | 0.00000000000000000005 |
| Time to death > 1 microcentimil (%) | 99.99999999999999999995 |
| Time to death < 1 nanocentimil (%) | 0.000000000000000000005 |
| Time to death > 1 nanocentimil (%) | 99.999999999999999999995 |
| Time to death < 1 picocentimil (%) | 0.0000000000000000000005 |
| Time to death > 1 picocentimil (%) | 99.9999999999999999999995 |
| Time to death < 1 femtocentimil (%) | 0.00000000000000000000005 |
| Time to death > 1 femtocentimil (%) | 99.99999999999999999999995 |
| Time to death < 1 attocentimil (%) | 0.000000000000000000000005 |
| Time to death > 1 attocentimil (%) | 99.999999999999999999999995 |
| Time to death < 1 zeptocentimil (%) | 0.0000000000000000000000005 |
| Time to death > 1 zeptocentimil (%) | 99.9999999999999999999999995 |
| Time to death < 1 yoctocentimil (%) | 0.00000000000000000000000005 |
| Time to death > 1 yoctocentimil (%) | 99.99999999999999999999999995 |
| Time to death < 1 rontocentimil (%) | 0.000000000000000000000000005 |
| Time to death > 1 rontocentimil (%) | 99.999999999999999999999999995 |
| Time to death < 1 quectocentimil (%) | 0.0000000000000000000000000005 |
| Time to death > 1 quectocentimil (%) | 99.9999999999999999999999999995 |
| Time to death < 1 sexagesimalcentimil (%) | 0.00000000000000000000000000005 |
| Time to death > 1 sexagesimalcentimil (%) | 99.99999999999999999999999999995 |
| Time to death < 1 centesimalcentimil (%) | 0.000000000000000000000000000005 |
| Time to death > 1 centesimalcentimil (%) | 99.999999999999999999999999999995 |
| Time to death < 1 millesimalcentimil (%) | 0.0000000000000000000000000000005 |
| Time to death > 1 millesimalcentimil (%) | 99.9999999999999999999999999999995 |
| Time to death < 1 decimilcentimil (%) | 0.00000000000000000000000000000005 |
| Time to death > 1 decimilcentimil (%) | 99.99999999999999999999999999999995 |
| Time to death < 1 centimilcentimil (%) | 0.000000000000000000000000000000005 |
| | |

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| | | | | |
|----------------------------|------------|-------------|------------|------------|
| HMGRclustalW{methanobac} | GKSITAEITV | PGEMVESVLK | TTPEAVVEVN | TAKNLTGSAA |
| AG..SMG.FN | | | | |
| HMGRclustalW{methanococ} | GKSIVAEVFL | TEKEVNKYLK | TTSQAIAEVN | RLKNYIGSAI |
| SN..SMG.FN | | | | |
| HMGRclustalW{halobacter} | GRSVTADVRI | PREVVVEERLH | TPPERGRELN | TRKNLVGSAM |
| AA..SLG.FN | | | | |
| HMGRclustalW{sulfolobus} | GKTVLAEALI | KKDVIRNLIH | SNAQLIHDIN | LRKNWLGTAR |
| AG..SLSQFN | | | | |
| HMGRclustalW{ yeast2} | GKSVVAEATI | PGDVVKSVLK | SDVSALVELN | ISKNLVGSAM |
| AG..SVGGFN | | | | |
| HMGRclustalW{ yeast1} | GKSVVAEATI | PGDVVRKVLK | SDVSALVELN | IAKNLVGSAM |
| AG..SVGGFN | | | | |
| HMGRclustalW{phycomyces} | ..... | ..... | ..... | ..... |
| | | | | |
| HMGRclustalW{ fusarium} | GKGVVAEAI | PGEVVRSVLK | SDVDSLVELN | VAKNLTGSAM |
| AG..SVGGFN | | | | |
| HMGRclustalW{ candida} | GKSVVAEASI | PKDAVVKVLK | SSVKAVVDVN | VKNLTGSAM |
| AG..SVGGFN | | | | |
| HMGRclustalW{dictyoste2} | GKSVVAEAVI | SGDIVRDVLK | TTVEALVSLN | IDKNLTGSAM |
| AG..SIGGFN | | | | |
| HMGRclustalW{wheat1} | GKSVVCEATI | KGRVVQSVID | TTVEKLVELN | IIKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{ rice} | GKSVVCEAI | KGDVVQKVLK | TTVEKLVELN | IIKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{ corn} | GKSVVCEAVI | G2EVVKKVLK | TDVQSLVELN | TIKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{wheat3} | GKSVVCEAVI | REELLKKVLK | TNVQSLVELN | VIKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{wheat2} | GKSVVCEAI | REEVVEKVL | TNVQSLVELN | VIKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{ soybean} | ..... | .....LK | TNVSALVELN | MLKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{rubbertre3} | GKSVVCEAI | KEEVVKKVLK | TNVAALVELN | MIKNLTGSAM |
| AG..SLGGFN | | | | |
| HMGRclustalW{rosyperiwi} | GKSVVCEAI | KEEIVKTVLK | TEVAALIELN | MVKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{ tomato} | GKSVVCEAI | TEEVVKKVLK | TEVAALVELN | MLKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{woodtobacc} | GKSVVCEAI | TEEVVKKVLK | TEVAALVELN | MLKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{ potato} | GKSVVCEAI | KEEVVKKVLK | TEVAALVELN | MLKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{radish} | GKSVVCEAVI | RGETVNKVLK | TSVASLVELN | MLKNLTGSAM |
| AG..SLGGFN | | | | |
| HMGRclustalW{arabidopsis1} | GKSVVCEAVI | RGEIVNKVLK | TSVAALVELN | MLKNLTGSAM |
| AG..SLGGFN | | | | |
| HMGRclustalW{cucumismel} | GKSVVCEAVI | KDEVVRKVLK | TSVASLVELN | MLKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{rubbertre2} | GKSVVCEAI | KEEVVKKVLK | TDVALLVELN | MLKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{rubbertre1} | GKSVVCEAI | KEEVVKKVLK | TNVASLVELN | MLKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{camptothec} | GKSVVCEAVI | KEEVVKKVLK | TNVASLVELN | MLKNLTGSAM |
| AG..ALGGFN | | | | |
| HMGRclustalW{arabidops2} | GKHVVCEAFI | KAEIVEKVLK | TSVEALVELN | TLKNLVGSAM |
| AG..SLGGFN | | | | |
| HMGRclustalW{chineseham} | GKTVVCEAVI | PAKVVRKVLK | TTTEAMIDVN | INKNLVGSAM |

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FIG. 32MM

| | | | | | |
|---------------------------|------------|------------|------------|------------|-----------------|
| AG..SIGGYN | | | | | |
| HMGRclustalw{chinese2} | GKTVVCEAVI | PAKVVREVLK | TTTEAMIDVN | INKNLVGSAM | |
| AG..SIGGYN | | | | | |
| HMGRclustalw{syrianhamst} | GKTVVCEAVI | PARVVREVLK | TTTEAMIDVN | INKNLVGSAM | |
| AG..SIGGYN | | | | | |
| HMGRclustalw{ rat} | GKTVVCEAVI | PAKVVREVLK | TTTEAMVDVN | INKNLVGSAM | |
| AG..SIGGYN | | | | | |
| HMGRclustalw{ rabbit} | GKTVVCEAVI | PAKVVREVLK | TTTEAMIDVN | INKNLVGSAM | |
| AG..SIGGYN | | | | | |
| HMGRclustalw{ human} | GKSVVCEAVI | PAKVVREVLK | TTTEAMIEVN | INKNLVGSAM | |
| AG..SIGGYN | | | | | |
| HMGRclustalw{ mouse} | GKTVVCEAVI | PAKVVREVLK | TTTEAMVDVN | INKNLVGSAM | |
| AG..SIGGYN | | | | | |
| HMGRclustalw{ xenopus} | GKSVVCEAVI | PAKVVREVLK | SSTEALVEVN | INKNFIGSAM | |
| AG..SIGGYN | | | | | |
| HMGRclustalw{sea urchin} | GKSVVCEATV | PAHIVQQVLK | TSASALVDLN | INKNLVGSAM | |
| AG..SIGGFN | | | | | |
| HMGRclustalw{ cockroach} | GKSVVCEAIV | PADIIKSVLK | TSVQALMDVN | ITKNLIGSAV | |
| AG..SIGGFN | | | | | |
| HMGRclustalw{drosophila} | GKRVVTECTI | SAATLRVLK | TDAKTLVECN | KLKMMGGSAM | |
| AG..SIGGNN | | | | | |
| HMGRclustalw{dictyostel} | GRSVVCEAMI | TGDVVQRVLK | TNVQALVDLN | IAKNLIGSAM | |
| AG..SIGGFN | | | | | |
| HMGRclustalw{schistosom} | GKSVIAEAHL | SADVLAQVLH | TNAQRLARLT | HSKNWIGSAM | |
| AGCPGMMGCN | | | | | |
| HMGRclustalw{archaeoglo} |GEEVV | EGIMLAYAFA | AADPFRCAH | NKGIMNGISA | |
| LM..... | | | | | |
| HMGRclustalw{pseudomonas} | TAEFSGEAVI | EGILDAYAFA | AVDPYRAATH | NKGIMNGIDP | |
| LI..... | | | | | |
| | Consensus | GKSVVCEAVI | PAEVVRKVLK | TTVEALVELN | ILKNLVGSAM AG-- |
| SLGGFN | | | | | |

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FIG. 32NN

1000
 HMGRclustalW{methanobac} AHYANIIGAI FLATGQDEAH IVEGSLGVTI AEERK.....
GDLYF
 HMGRclustalW{methanococ} AHYANIIGAI FLATGQDEAH IVEGSLGITM AEVED.....
DGLYF
 HMGRclustalW{halobacter} AHVANVVAAM FLATGQDEAQ VVEGANAITT AEVQD.....
GDLYV
 HMGRclustalW{sulfolobus} AHFANIVTAI FIATGQDVAQ IVESSSGYTW TEVRG.....
EDLYI
 HMGRclustalW{ yeast2} AHAANLVTAL FLALGQDPAQ NVESSNCITL MKEVD.....
GDLRI
 HMGRclustalW{ yeast1} AHAANLVTAV FLALGQDPAQ NVESSNCITL MKEVD.....
GDLRI
 HMGRclustalW{phycomyces}

 HMGRclustalW{ fusarium} AHAANIVAAI FLATGQDPAQ VVESANCITI MKNLN.....
GALQI
 HMGRclustalW{ candida} AQAANMVTAV YLALGQDPAQ NVESSNCITL MTETED....
GDLKV
 HMGRclustalW{dictyoste2} AHASNIVTAL YIATGQDPAQ NVESSNCITL MESINGG...
KDLVI
 HMGRclustalW{wheat1} AHASNIATAL FIATGQDPAQ NVESSQCITM LEAVNEG...
KDLHI
 HMGRclustalW{ rice} AHASNIVTAL FIATGQDPAQ NVESSQCITM LEEVNDG...
DDLHI
 HMGRclustalW{ corn} AHASNIVTAI FIATGQDPAQ NVESSHCITM LEPVNAG...
RDLHI
 HMGRclustalW{wheat3} AHASNIVTAI FIATGQDPAQ NVESSQCIAM LEAVNDG...
KDLHI
 HMGRclustalW{wheat2} AHASNIVSAI FIATGQDPAQ NVESSQCITM LEAVNGG...
RDLHI
 HMGRclustalW{ soybean} AHASNIVSAI FIATGQDPAQ NVESSHCITM MEAVNDG...
RDLHI
 HMGRclustalW{rubbertre3} AHASNMVTAV YIATGQDPAQ NVESSHCITM MEAVNDG...
KDLHI
 HMGRclustalW{rosyperiwi} AHASNIVSAI FIATGQDPAQ NVESSQCITM MEAVNDG...
KDLHI
 HMGRclustalW{ tomato} AHASNIVSAV FIATGQDPAQ NIESSHCITM MEAVNDG...
KDLHI
 HMGRclustalW{woodtobacc} AHASNIVSAV YIATGQDPAQ NIESSHCITM MEAVNDG...
KDLHV
 HMGRclustalW{ potato} AHASNIVSAV YLATGQDPAQ NVESSHCITM MEAVNDG...
KDLHV
 HMGRclustalW{radish} RHASNIVSAV FLATGQDPAQ NVESSQCITM MEAVNDG...
KDIHI
 HMGRclustalW{arabadopsis1} AHASNIVSAV FIATGQDPAQ NVESSQCITM MEAVNDG...
KDIHI
 HMGRclustalW{cucumismel} AHSSNIVSAI FLATGQDPAQ NVESSHCITM MEPVNNG...
RDLHI
 HMGRclustalW{rubbertre2} AHAGNIVSAI FIATGQDPAQ NVESSHCITM MEAVNDG...
KDLHI
 HMGRclustalW{rubbertre1} AHAGNIVSAI FIATGQDPAQ NVESSHCITM MEAVNDG...
KDLHI
 HMGRclustalW{camptothec} AHASNIVSAV YLATGQDPAQ NVESSHCITM MEAVNDG...
KDLHV
 HMGRclustalW{arabadops2} AHSSNIVSAV FIATGQDPAQ NVESSHCITM ILPDGD....
DLHI
 HMGRclustalW{chineseham} AHAANIVTAI YIACGQDAAQ NVGSSNCITL MEASGPTN..

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FIG. 3200

.....EDLYI
 HMGRclustalW{chineseha2} AHAANIVTAI YIACGQDAAQ NVGSSNCITL MEASGPTN..
EDLYI
 HMGRclustalW{syrianhamst} AHAANIVTAI YIACGQDAAQ NVGSSNCITL MEASGPTN..
EDLYI
 HMGRclustalW{ rat} LHAANIVTAI YIACGQDAAQ NVGSSNCITL MEASGPTN..
EDLYI
 HMGRclustalW{ rabbit} AHAANYVTAI YIACGQDAAQ NVGSSNCITL MEASGPPN..
EDLYI
 HMGRclustalW{ human} AHAANIVTAI YIACGQDAAQ NVGSSNCITL MEASGPTN..
EDLYI
 HMGRclustalW{ mouse} AHAANIVTAI YIACGQDAAQ NVGSSNCITL MEASGPTN..
EDLYI
 HMGRclustalW{ xenopus} AHAANIVTAI YIACGQDAAQ NVGSSNCITI MEATGPTY..
EDLYI
 HMGRclustalW{sea urchin} AHAANIVTAI YIATGQDAAQ NIASSNCMTL METRGPKG..
GDLYL
 HMGRclustalW{ cockroach} AHAANIVTAI FIATGQDPAQ NVGSSNCMTL MEPWGEDG..
KDLVY
 HMGRclustalW{drosophila} AHAANMVTAV FLATGQDPAQ NVTSSNCSTA MECWAENS..
EDLYM
 HMGRclustalW{dictyoste1} AHAANIVTAI FLATGQDCAQ NVESSNCITQ MEACNDG..
QDLVI
 HMGRclustalW{schistosom} AHAANIIAGM FAATGQDLAQ VVDSSSCLTQ LEVDLSD..
DSLVA
 HMGRclustalW{archaeoglo} IATGNDFRA IEAGAHSYAA IGG.YKPLTT
 YEVDRKGNLV
 HMGRclustalW{pseudomonas} VATGNDWRA VEAGAHAYAC RSGHYGSLTT
 WEKDNNGHLV

 Consensus AHAANIVTAI FIATGQDPAQ NVESSNCITM MEAVNDGN-- ----
 KDLHI

FIG. 32PP

| | 1001 | |
|---------------------------|------------|----------------------------------|
| 1050 | | |
| HMGRclustalW{methanobac} | AVNLPDVPLA | TVGGGTGLET ASECLDIMGV RGGG..... |
| RVHAFAEIVG | | |
| HMGRclustalW{methanococ} | SVTLPDVPIG | TVGGGTRVET QKECLEMLGC YGDN..... |
| KALKFAEIVG | | |
| HMGRclustalW{halobacter} | SVSIASLEVG | TVGGGTKLPT QSEGLDILGV SGGGDP.AGS |
| NADALAECIA | | |
| HMGRclustalW{sulfolobus} | SVTLPSLEVG | TVGGGTRLPT QKEALSIMGV YGSGNP.PGS |
| NAKKLAEIIA | | |
| HMGRclustalW{ yeast2} | SVSMPSIEVG | TIGGGTVLEP QGAMLDLLGV RGPHPTEPGA |
| NARQLARIIA | | |
| HMGRclustalW{ yeast1} | SVSMPSIEVG | TIGGGTVLEP QGAMLDLLGV RGPHTAPGT |
| NARQLARIVA | | |
| HMGRclustalW{phycomyces} | ..... | ..... |
| | | |
| HMGRclustalW{ fusarium} | SVSMPSLEVG | TLGGGTILEP QGAMLDILGV RGSHTNPBGD |
| NARRLARIIG | | |
| HMGRclustalW{ candida} | SVSMPSIEVG | TIGGGTILDP QGSMLELLGV RG.PADVPE |
| NARQLAKIVA | | |
| HMGRclustalW{dictyoste2} | SVTMPSIEVG | TVGGGTHLPA QSACLDLLKI RGANLERPGA |
| NSEQLARVVA | | |
| HMGRclustalW{wheat1} | SVTMPPIEV. | ..... |
| | | |
| HMGRclustalW{ rice} | SVTMPSIEVG | TIGGGTCLAS QAACLNLLGV KGSNHGSPGA |
| NAGRLATIVA | | |
| HMGRclustalW{ corn} | SVTMPSIEVG | TVGGGTQLAS QSACLDLLGV RGASRDSPGS |
| NARLLATVVA | | |
| HMGRclustalW{wheat3} | SVTMPPIEV. | ..... |
| | | |
| HMGRclustalW{wheat2} | SVTMPPIEV. | ..... |
| | | |
| HMGRclustalW{ soybean} | SVTMPSIEVG | TVGGGTQLAS QSACLNLLGV KGASKESPGS |
| NSRLLATIVA | | |
| HMGRclustalW{rubbertre3} | SVSMPSIEVG | TVGGGTQLAS QSACLNLLGV KGASKDSPGS |
| NSRLLATIVA | | |
| HMGRclustalW{rosyperiwi} | SVTMPSIEVG | TVGGGTQLAS QSACLNLLGV KGASKDSPGA |
| NSRLLATIVA | | |
| HMGRclustalW{ tomato} | SVTMPSIEVG | TVGGGTQLAS QSACLNLLGV KGANREAPGS |
| NARLLATVVA | | |
| HMGRclustalW{woodtobacc} | SVTMPSIEVG | TVGGGTQLAS QSACLNLLGV KGANREVPGS |
| NARLLATIVA | | |
| HMGRclustalW{ potato} | SVTMPSIEVG | TVGGGTQLAS QSACLNLLGV KGANRDAPGS |
| NARLLATIVA | | |
| HMGRclustalW{radish} | SVTMPSIEVG | TVGGGTQLAS QSACLNLLGV KGASKESPGM |
| NSRLLATIVA | | |
| HMGRclustalW{arabadosis1} | SVTMPSIEVG | TVGGGTQLAS QSACLNLLGV KGASTESPGM |
| NARRLATIVA | | |
| HMGRclustalW{cucumismel} | SVTMPSIEVG | TVGGGTQLAS QSACLNLLGV KGASKESPGA |
| NSRLLATIVA | | |
| HMGRclustalW{rubbertre2} | SVTLPSIEVG | TVGGGTQLAS QSACLNLLGV MGACKESPGS |
| YSRLLATIVA | | |
| HMGRclustalW{rubbertrel} | SVTMPSIEVG | TVGGGTQLAS QSACLNLLGV KGANKESPGS |
| NSRLLAIVA | | |
| HMGRclustalW{camptothec} | SVTMPSIEVG | TVGGGTQLAS QSACLNLLGV KGASKEAPGS |
| NARLLATIVA | | |
| HMGRclustalW{arabados2} | SVSMPCIEVG | TVGGGTQLAS QAACLNLLGV KGSNNKPGS |
| NAQQLARIVA | | |
| HMGRclustalW{chineseham} | SCTMPSIEIG | TVGGGTNLLP QQACLQMLGV QGACKDNPE |
| NARQLARIVC | | |

FIG. 32QQ

HMGRclustalW{chineseha2} SCTMPSIEIG TVGGGTNLLP QQACLQMLGV QGACKDNPGE
 NARQLARIVC
 HMGRclustalW{syrianhamst} SCTMPSIEIG TVGGGTNLLP QQACLQMLGV QGACKDNPGE
 NARQLARIVC
 HMGRclustalW{ rat} SCTMPSIEIG TVGGGTNLLP QQACLQMLGV QGACKDNPGE
 NARQLARIVC
 HMGRclustalW{ rabbit} SCTMPSIEIG TVGGGTNLLP QQACLQMLGV QGACKDSPGE
 NARQLARIVC
 HMGRclustalW{ human} SCTMPSIEIG TVGGGTNLLP QQACLQMLGV QGACKDNPGE
 NARQLARIVC
 HMGRclustalW{ mouse} SCTMPSIEIG TVGGGTNLLP QQACLQMLGV QGACKDNPGE
 NARQLARIVC
 HMGRclustalW{ xenopus} SCTMPSIEIG TVGGGTNLLP QQACLQMLGV QGASTETPGK
 NACQLAQIVC
 HMGRclustalW{sea urchin} SCTMPSIEIG TVGGGTNLLP QSACLQMLGV KGSNIHGSGL
 NASQLARIVC
 HMGRclustalW{ cockroach} SCTMPSIEIG TIGGGTVLPP QAACLDMLGV RANEMCPGE
 NANTLARIVC
 HMGRclustalW{drosophila} TCTMPSIEIG TVGGGTNLLP QSACLEMLGV RGAHATRPGE
 NAKQLAQIVC
 HMGRclustalW{dictyostel} TVTMSIEIG TVGGGTSLPA QSACLDIIGV KGSSSSKPGA
 NADQLAKTIA
 HMGRclustalW{schistosom} SVTMPCLEVG TVGGGTNLLP QRACLDLLDL SV....D.R
 PTEHLSRIIA
 HMGRclustalW{archaeoglo} GTIEIPMAVG VIGGATKVP LAKISLKILG VNTAEELARV AAAL
 HMGRclustalW{pseudomonas} GTLEMPMPVG LVGGATKTHP LAQLSLRILG VKTAQALAEI AVAV

 Consensus SVTMPSIEVG TVGGGTQLAP QSACLNLLGV KGA-KESPGS
 NARQLARIVA

NADH binding domain 2

FIG. 32RR

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| | | | | |
|-------------------|----------------------------|------------|------------|------------------------|
| 1100 | HMGRclustalW{methanobac} | GAVLAGELSL | MGALAAGHLA | RAHSELGRG. |
| | HMGRclustalW{methanococ} | AAVLAGESSL | LGALAAGHLG | KAHQELGR.. |
| ..... | HMGRclustalW{halobacter} | VGSLAGESSL | LSALASRHLS | SAHAELGR.. |
| ..... | HMGRclustalW{sulfolobus} | STVLSGELNL | LAALSNKELG | KAHAKLGRAM KV..... |
| ..... | HMGRclustalW{ yeast2} | CAVLAGESSL | CSALAAGHLV | QSHMTHNRK. ..TNKANELP |
| QPS..... | HMGRclustalW{ yeast1} | CAVLAGESSL | CAALAAGHLV | QSHMTHNRKP AEPTKPNNLD |
| ATDI..... | HMGRclustalW{phycomycetes} | ..... | ..... | ..... |
| ..... | HMGRclustalW{ fusarium} | AAVLAGESSL | CSALAAGHLV | RAHMQHNRSA APSRSTTPGS |
| SHDARLTGHD | HMGRclustalW{ candida} | SIVLSGELSL | VSALAAGHLV | QSHMQHNRAA AKK..... |
| ..... | HMGRclustalW{dictyoste2} | AAVLAGESSL | MSALAAGHLV | RSHLKHNKRKT EAPAPQADTI |
| <u>SMTHNLPHSD</u> | HMGRclustalW{wheat1} | ..... | ..... | ..... |
| ..... | HMGRclustalW{ rice} | GSVVAGRALL | LAALASGHLV | KSHMMYNRSS KDVAK..... |
| ..... | HMGRclustalW{ corn} | GGVLAGELSL | LSALAAGQLV | KSHMKYNRSS KDVSS..... |
| ..... | HMGRclustalW{wheat3} | ..... | ..... | ..... |
| ..... | HMGRclustalW{wheat2} | ..... | ..... | ..... |
| ..... | HMGRclustalW{ soybean} | GSVLAGELSL | MSAIAAGQLV | NSHMKYNRSS KDVTK..... |
| ..... | HMGRclustalW{rubbertre3} | GSVLAGELSL | MSAIAAGQLV | NSHMKYNRSA KDVSK..... |
| ..... | HMGRclustalW{rosyperiwi} | GSVLAGELSL | MSAISAGQLV | RSHMKYNRSS KDITN..... |
| ..... | HMGRclustalW{ tomato} | GSVLAGELSL | MSAISSGQLV | NSHMKYNRST KDVTK..... |
| ..... | HMGRclustalW{woodtobacc} | GSVLAGELSL | MSAISAGQLV | KSHMKYNRST KDVTK..... |
| ..... | HMGRclustalW{ potato} | GSVLAGELSL | MSAISAGQLV | KSHMKYNRSI KDISK..... |
| ..... | HMGRclustalW{radish} | GAVLAGELSL | MSAIAAGQLV | RSHMKYNRSS RDISG..... |
| ..... | HMGRclustalW{arabadopsis1} | GAVLAGELSL | MSAIAAGQLV | RSHMKYNRSS RDISG..... |
| ..... | HMGRclustalW{cucumismel} | GSVLAGELSL | MSAIAAGQLV | RSHMKYNRSS RDVSK..... |
| ..... | HMGRclustalW{rubbertre2} | GSVLAGELSL | MSAIAAGQLV | KSHMKYNRSS KDVSK..... |
| ..... | HMGRclustalW{rubbertrel} | GSVLAGELSL | MSAIAAGQLV | KSHMKYNRSS KDMSK..... |
| ..... | HMGRclustalW{camptothec} | GSVLAGELSL | MSAIAAGQLV | NSHMKYNRSN KDVTK..... |
| ..... | HMGRclustalW{arabadops2} | GSVLAGELSL | MSAIAAGQLV | KSHMKYNRSS RDIGP..... |
| | HMGRclustalW{chineseham} | GTMAGELSL | MAALAAGHLV | RSHMVHNRSK INLQD..... |

FIG. 32SS

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.....
HMGRclustalW{chineseha2} GTVMAGELSL MAALAAGHLV RSEMVHNRSK INLQD.....
.....
HMGRclustalW{syrianhamst} GTVMAGELSL MAALAAGHLV RSEMVHNRSK INLQD.....
.....
HMGRclustalW{      rat} GTVMAGELSL MAALAAGHLV RSEMVHNRSK INLQD.....
.....
HMGRclustalW{      rabbit} GTVMAGELSL MAALAAGHLV KSEMIHNRSK INLQD.....
.....
HMGRclustalW{      human} GTVMAGELSL MAALAAGHLV KSEMIHNRSK INLQD.....
.....
HMGRclustalW{      mouse} GTVMAGELSL MAALAAGHLV RSEMVHNRSK INLQD.....
.....
HMGRclustalW{      xenopus} STVMAGELSL MAALAAGHLV KSEMVHNRSK INLQD.....
.....
HMGRclustalW{sea urchin} ATVMAGELSL MSALAAGHLV KSEMKHNRSK LNIASPLPSI
DEVATHRRSK
HMGRclustalW{cockroach} GTVLAGELSL MSALAAGHLV KSEMRHNRSK VSTSG.....
.....
HMGRclustalW{drosophila} ATVMAGELSL MAALVNSDLV KSEMRHNRSK IAVNSAN...
.....
HMGRclustalW{dictyostel} SAVMAGELSL MSALSAGHLM KSHLQYNRAK TN.....
.....
HMGRclustalW{schistosom} GTVLAAELSL MAALDTDDLK KAHMHFNRAK QSTNSHSCSH
STTTDNNNDNI
HMGRclustalW{archaeoglo} ..GLAQNFAG LRALATEGIQ RGHMELHARN LAIMAGATGD
EVDREVVEIMV
HMGRclustalW{pseudomonas} ..GLAQNLGA MRALATEGIQ RGHMALHARN IAVVAGARGD
EVDWVARQLV

Consensus GTVLAGELSL MSALAAGHLV KSEMK-NRSS KDVSK-----
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* †††

FIG. 32TT

| | | | | |
|-------|---------------------------|----------------------------------|-----------------------|--|
| 1152 | HMGRclustalW{methanobac} | | 1101 | |
| | HMGRclustalW{methanococ} | | | |
| | HMGRclustalW{halobacter} | | | |
| ..... | HMGRclustalW{sulfolobus} | ..... |  |  |
| ..... | HMGRclustalW{ yeast2} | ..... | ..NKGPPCKT SALL..... | |
| ..... | HMGRclustalW{ yeast1} | ..... | ..NRLKDGSV TCIKS..... | |
| ..... | HMGRclustalW{phycomyces} | ..... |  |  |
| ..... | HMGRclustalW{ fusarium} | QCPRALSVNN VDERRRYSEV KAIDE..... | | |
| ..... | HMGRclustalW{ candida} | ..... |  |  |
| ..... | HMGRclustalW{dictyoste2} | ..... |  |  |
| ..... | HMGRclustalW{wheat1} | ..... |  |  |
| ..... | HMGRclustalW{ rice} |A .....AS..... | | |
| ..... | HMGRclustalW{ corn} |T .....TATEK TRQREVDV.. | | |
| ..... | HMGRclustalW{wheat3} | ..... |  |  |
| ..... | HMGRclustalW{wheat2} | ..... |  |  |
| ..... | HMGRclustalW{ soybean} |I .....S..... | | |
| ..... | HMGRclustalW{rubbertre3} |I .....TF..... | | |
| ..... | HMGRclustalW{rosyperiwi} |I .....ASSQL ESDS..... | | |
| ..... | HMGRclustalW{ tomato} |A .....SS..... | | |
| ..... | HMGRclustalW{woodtobacc} |A .....SS..... | | |
| ..... | HMGRclustalW{ potato} | ..... |  |  |
| ..... | HMGRclustalW{radish} |A .....TTTT..... | | |
| ..... | HMGRclustalW{arabadosis1} |A .....TTTTT TTT..... | | |
| ..... | HMGRclustalW{cucumismel} |L .....ES..... | | |
| ..... | HMGRclustalW{rubbertre2} |A .....AS..... | | |
| ..... | HMGRclustalW{rubbertre1} |A .....AS..... | | |
| | HMGRclustalW{camptothec} |ASS..... | | |
| | HMGRclustalW{arabados2} |SSQVNR..... | | |
| | HMGRclustalW{chineseham} |LQGTCTK KSA..... | | |
| | | | | |

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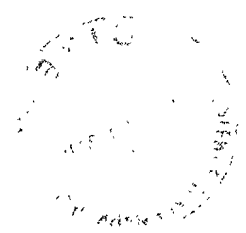


FIG. 32UU

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HMGRclustalW{chineseha2} .....LQGTCTK KSA.....
.....
HMGRclustalW{syrianhamst} .....LQGTCTK KAA.....
.....
HMGRclustalW{      rat} .....LQGTCTK KAA.....
.....
HMGRclustalW{      rabbit} .....LEGACTK KAA.....
.....
HMGRclustalW{      human} .....LQGTCTK KTA.....
.....
HMGRclustalW{      mouse} .....LQGTCTK KAA.....
.....
HMGRclustalW{      xenopus} .....LPGTCTK KAA.....
.....
HMGRclustalW{sea urchin} SVDFSALKES SAAAPGTCTA NAS.....
.....
HMGRclustalW{cockroach} .....S ...EPSTPAC KS.....
.....
HMGRclustalW{drosophila} .....NP LNVTVSSCST IS.....
.....
HMGRclustalW{dictyostel} .....
.....
HMGRclustalW{schistosom} SNIYDNENVA LSSKIPVTDN SDIRESVHSL HVK2FPVKSD
LSVNPEISHY TM
HMGRclustalW{archaeoglo} RDGKIRLDYA KEVLRLRS. ....
.....
HMGRclustalW{pseudomonas} EYHDVRADRA VALLKQKRGQ .....
.....

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Consensus -----A ---LQGTCTK KAA-----

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